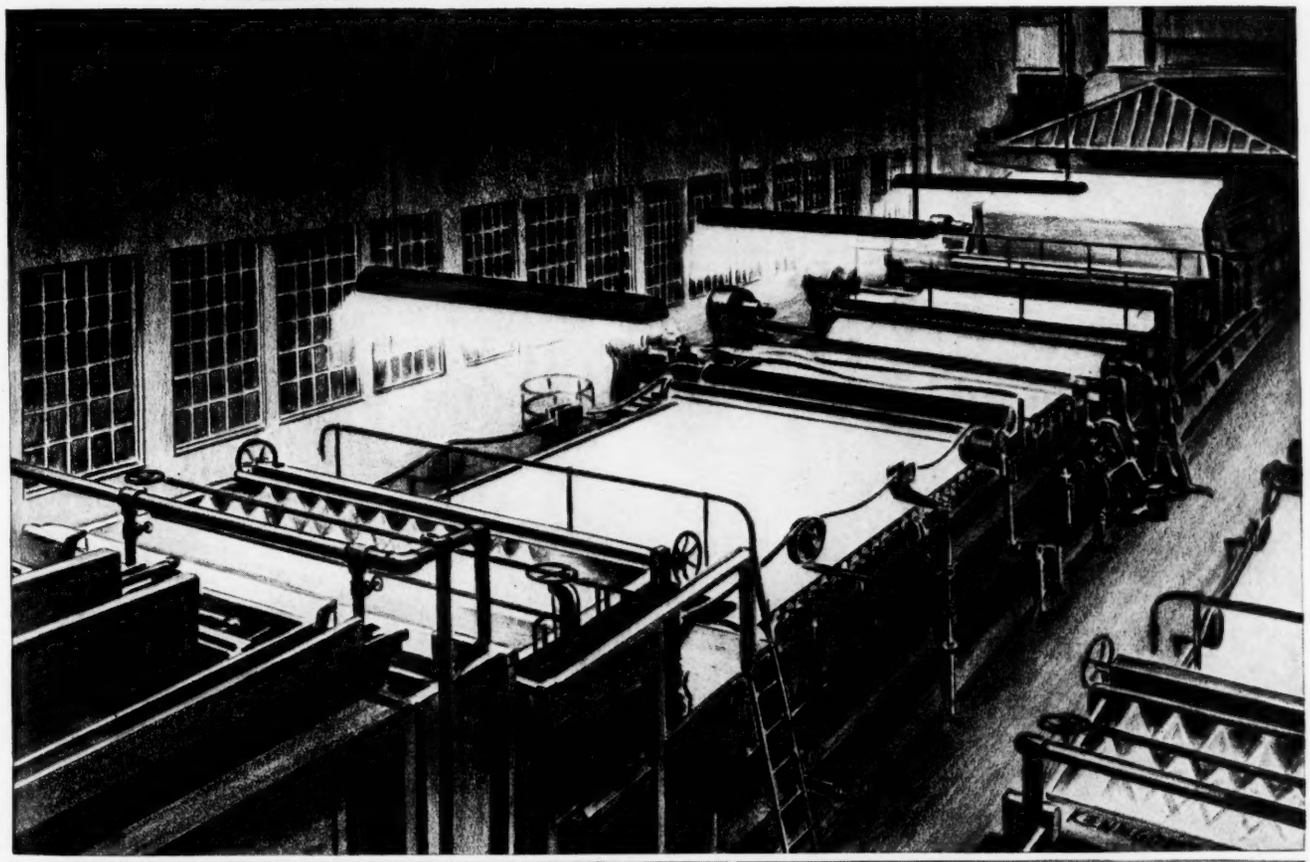
"PRINTED IN U.S.A."

Suppose some one who lived forty or fifty years ago—say one of the founders of Mathieson—could pay us a visit today. And suppose we could have the pleasure of showing him the sights of 1940, of explaining the vast changes that have taken place since the turn of the century. What do you think would amaze the old gentleman most? If he were one of the pioneers who founded Mathieson, we believe he would be most interested in the revolutionary changes wrought by chemical progress and in the part his successors have played in building the present-day America. We would go about telling him the story as we tell it in this series of advertisements.

● **Yes, Mr. M., more than 19,000 periodicals were published in the United States last year, and hundreds of thousands of advertising mailing pieces, catalogs, etc. were printed and issued. Millions of pages of information, entertainment, ideas and critiques—reflections of this nation's thoughts and hopes. All of this consumed over 4,000,000 tons of white paper. Add the millions of tons of Kraft paper now produced annually and you have some idea of the amazing progress that has been made in recent years by this country's great paper industry—progress as noteworthy in quality as in quantity.**

Your successors here at Mathieson are proud of the fact that Mathieson Chemicals—liquid chlorine, caustic soda, soda ash, synthetic salt cake—have played and continue to play so important a part, from cooking liquor to finished bleached pulp, in the great American paper industry.



MATHIESON CHEMICALS

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THE MATHIESON ALKALI WORKS (INC.)
60 E. 42ND STREET, NEW YORK, N. Y.

The Reader Writes—

"Answering the Threat to Democracy"

You are to be congratulated for the fine editorial entitled "Answering the Threat to Democracy" which appeared in the June issue. This is being called particularly to the attention of our executives and superintendents. I believe it is well worth reprinting in leaf form for posting and would very much like to obtain copies of it at the earliest possible moment.

J. C. Hobbs,
Vice-President,
Diamond Alkali Company,
Painesville, Ohio.

In the past, one of the features in your magazine which often displeased me was the type of editorial, which many times I felt was not suited to the publication. However, the editorial in the present issue more than makes up for all the poor ones in the past, and I want to congratulate you very sincerely on it. Keep up the good work.

Frederick A. Hessel,
Ellis-Foster Company,
Montclair, N. J.

Editorials like "Answering the Threat to Democracy" in your June issue will do more to straighten out our thinking than most of us imagine. More power to them! This one is especially strong.

Robert D. Landrum,
Sales Manager,
Special Products Division,
The Harshaw Chemical Co.,
Cleveland, Ohio.

Larger Type

Chemical Industries is, as you know, one of the most useful publications to us and one which we read continuously.

Personally I feel that the Data Section is a worthwhile effort, but as far as I am concerned a great deal of the material—especially the patent abstracts—is extremely difficult to read because of the small print. It is really quite a job to go through all these patents, and I am wondering if some means couldn't be devised to make it a bit simpler to pick out those abstracts of interest for reading. Perhaps a word or two to illustrate the subject could be capitalized—or printed in larger type. I feel on the whole the abstracts are very well done.

F. J. Curtis,
Development Director,
Monsanto Chemical Company,
St. Louis, Mo.

Chemical Nomenclature

Chemical nomenclature and usage of chemical terms have interested me for some time. After three years of subject indexing and proofreading as a member of the staff of *Chemical Abstracts*, the preferred usage of the terms benzene, toluene, and xylene for the three hydrocarbons was so well-grounded in me that the terms benzol, toluol, and xylol seemed positively incorrect. The "ol" ending has always signified an alcohol to me. Now, after working three years in an industrial atmosphere, I find that benzol, toluol, and xylol are used quite frequently in the trade journals. On page 748 of the June, 1940, issue of Chemical Industries, for example, all three words appear. Sometimes the crude products are clearly indicated, other times not. Regardless of the purity of the products, it would seem that one or the other name should be sufficient for each hydrocarbon.

If you or any member of your staff have ever had any discussions on this nomenclature and usage problem, I would appreciate an industrialist's point of view.

A Reader.

Editorial Note: The writer of this letter has specifically requested that his name and company connection be withheld. Readers are invited to present their views on this timely subject.

Continuity of Service

Will you please tell us whether our subscription to Chemical Industries is paid? We don't want to miss the latest edition of your "Guidebook," nor do we want to miss future issues of Chemical Industries.

H. A. Pinkalla,
Industrial Service Laboratories,
Milwaukee, Wisc.

Editorial Note: Reader Pinkalla's fears are groundless. He is paid up to April, 1942.

Word of Approval From June Author

Have just read the June issue upon my return to the city. I certainly like the way you have handled the American Institute of Chemists' meeting at Atlantic City; also the publication of my address. I also read Dr. Stine's article with intense interest.

Gustav Egloff,
Director of Research,
Universal Oil Products Company,
Chicago, Ill.

We Ask You

I suggest that you give a list of the principal chemical and related periodicals, both United States and foreign. Ask your readers' opinions on this.

Virgil Redgate,
Hutchinson Specialty Laboratory,
Hutchinson, Kansas.

Calendar of Events

July

July 10, New Orleans Paint, Varnish & Lacquer Ass'n., New Orleans Athletic Club, New Orleans, La.
July 25, Chicago Drug & Chemical Ass'n.. Monthly Noonday Luncheon, Morrison Hotel, Chicago.

August

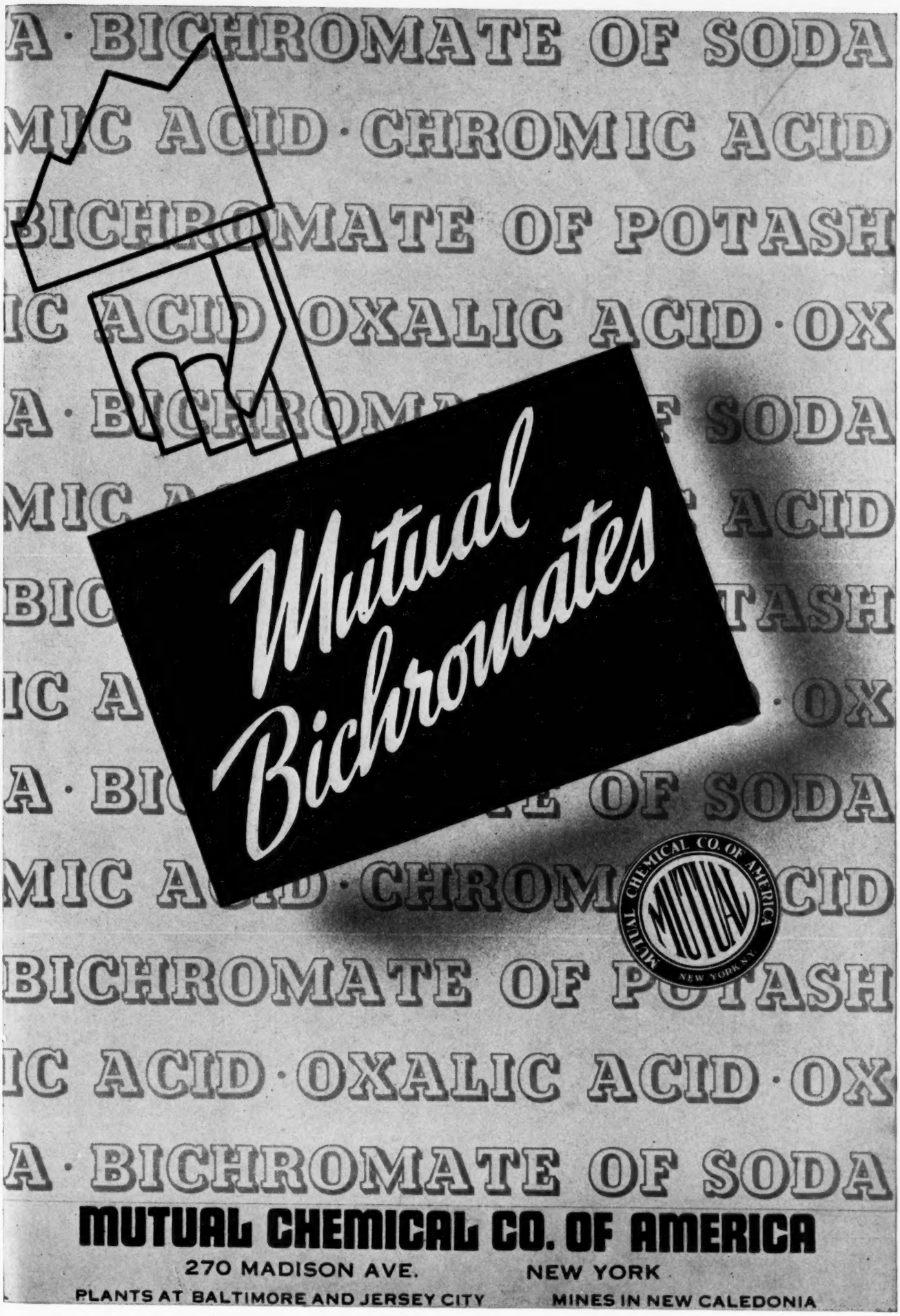
Aug. 1, Indianapolis Paint, Varnish & Lacquer Ass'n., Columbia Club, Indianapolis, Ind.
Aug. 5, Chicago Paint & Varnish Production Club, Electric Club, Civic Opera Building, Chicago.
Aug. 14, New Orleans Paint, Varnish & Lacquer Ass'n., New Orleans Athletic Club, New Orleans, La.
Aug. 29, Chicago Drug & Chemical Association, Monthly Luncheon, Morrison Hotel, Chicago.

September

Sept. 2, Chicago Paint & Varnish Production Club, Electric Club, Civic Opera Building, Chicago.
Sept. 3-5, American Society of Mechanical Engineers, Fall Meeting, Spokane, Wash.
Sept. 4-6, Pennsylvania Electric Association, Bedford Springs Hotel, Bedford Springs, Va.
Sept. 5, Indianapolis Paint, Varnish & Lacquer Ass'n., Columbia Building, Indianapolis, Ind.
Sept. 6, Baltimore Paint & Varnish Production Club, Baltimore, Md.
Sept. 8-11, Federal Wholesale Druggists Ass'n., Hot Springs, Va.
Sept. 9-12, American Chemical Society—100th Fall Meeting, Detroit, Mich.
Sept. 9-12, Illuminating Engineering Society, Essex and Sussex Hotel, Spring Lake, N. J.
Sept. 10, Louisville Paint, Varnish & Lacquer Ass'n., Louisville, Ky.
Sept. 11, New Orleans Paint, Varnish & Lacquer Ass'n., New Orleans Athletic Club, New Orleans, La.
Sept. 23-27, The National Ass'n. of Retail Druggists, Hotel Pennsylvania, New York, N. Y.
Sept. 26, Chicago Drug & Chemical Ass'n., Monthly Noonday Luncheon, Morrison Hotel, Chicago.
Sept. 30-Oct. 3, National Wholesale Druggists Ass'n., Annual Convention, Greenbrier Hotel, White Sulphur Springs, West Virginia.

October

Oct. 2-5, Electrochemical Society, Inc., Semi-Annual Convention, Ottawa, Ont., Canada.
Oct. 3, Indianapolis Paint, Varnish & Lacquer Ass'n., Columbia Club, Indianapolis, Ind.
Oct. 4, Baltimore Paint & Varnish Production Club, Baltimore, Md.
Oct. 7, Chicago Paint & Varnish Production Club, Electric Club, Civic Opera Building, Chicago.
Oct. 7-11, 29th National Safety Congress and Exposition of the National Safety Council, Stevens Hotel, Chicago.
Oct. 8, Louisville Paint, Varnish & Lacquer Ass'n., Louisville, Ky.
Oct. 9, New Orleans Paint, Varnish & Lacquer Ass'n., New Orleans Athletic Club, New Orleans, La.
Oct. 9, Philadelphia Paint, Varnish & Lacquer Ass'n., Philadelphia, Pa.


A · BICHROMATE OF SODA
MIC ACID · CHROMIC ACID
BICHROMATE OF POTASH
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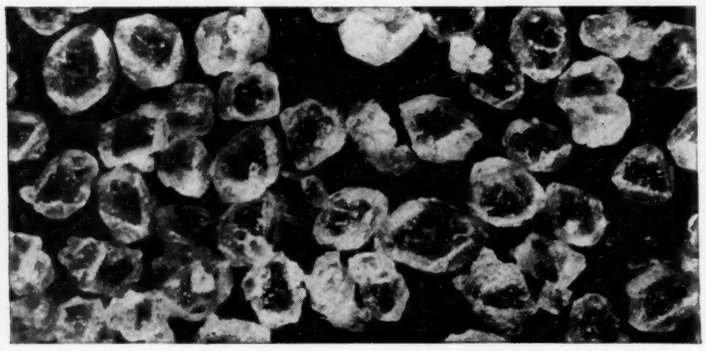
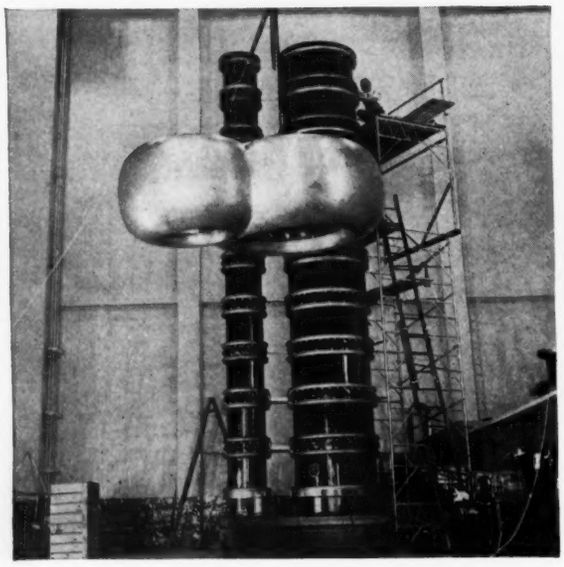
Mutual
Bichromates
MUTUAL CHEMICAL CO. OF AMERICA
MUTUAL
NEW YORK N.Y.
BICHROMATE OF POTASH
IC ACID · OXALIC ACID · OX
A · BICHROMATE OF SODA
MUTUAL CHEMICAL CO. OF AMERICA
270 MADISON AVE. NEW YORK
PLANTS AT BALTIMORE AND JERSEY CITY
MINES IN NEW CALEDONIA

Life on the

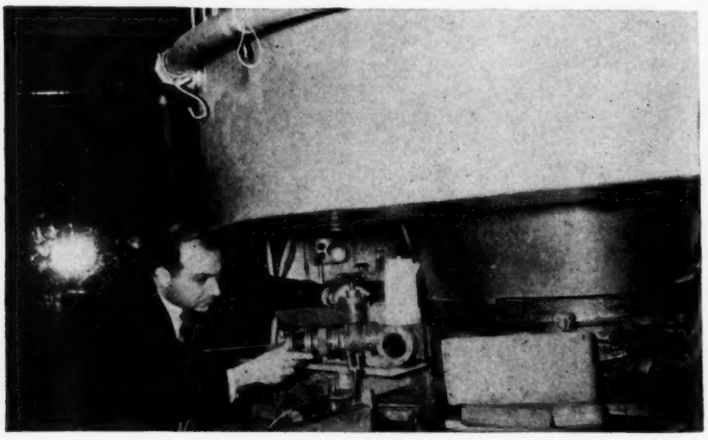
(*Left*) **NEW SYNTHETIC RUBBERS,** attention center today, can now be made entirely from domestic raw materials. Top photo shows the raw product fresh from a coagulating vat being broken up and sheeted on a wash mill. Lower photo shows thick, milky-white latex which contains two and a half pounds of synthetic rubber per gallon and is very similar to the natural product. Stirring in large vat, like the one illustrated, gives it high resistance to heat and oxygen, prime enemies of natural rubber. Automobile tires of the new synthetic will be on the market shortly.



(*Above*) **FERRICYANIDE PRODUCTION** is a new addition to Cyanamid's list of American "firsts." Potassium Sodium Ferricyanide is now available in ample quantities—replacing Red Prussiate of Potash and relieving industry of dependence on imports. Photomicrograph shows crystalline form of Potassium Sodium Ferricyanide. Crystals are small, promoting quick solubility. The new product will be marketed under trade-name "REDSOL Crystals."



(*Above*) **WORLD'S LARGEST X-RAY** is being assembled at the National Bureau of Standards, Washington, D. C. It will generate rays by using a voltage of 1,500,000. Two 31-foot towers will be topped by the spun metal corona cap shown being hoisted into place.

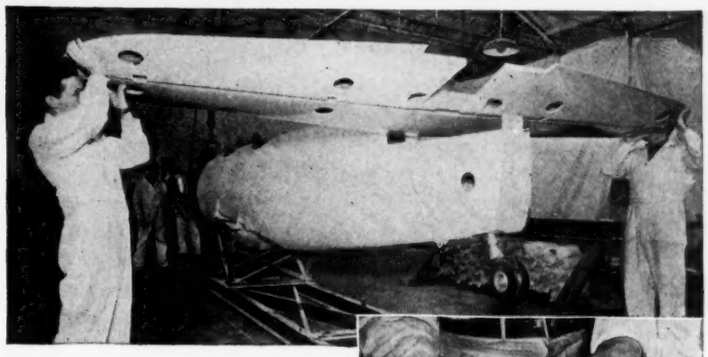


(*Above*) **ATOMIC ENERGY,** long a dream of science, may be a step nearer to realization as the result of work being done with U-235. An isotope of uranium, U-235 releases energy by nuclear fission at the rate of 200,000,000 electron volts for every atom split. Physicists in many countries have been working for years on the problem of uranium power, but enormous technical difficulties still remain to be overcome before atomic energy can be regarded as a commercial possibility. Photo shows Dr. J. R. Dunning of Columbia, with the cyclotron in which tests on U-235 are being conducted. Researchers in leading industrial organizations and universities are cooperating in further studies of U-235.

CHEMICAL NEWSFRONT

(*Above*) **SHARPER EYES FOR SCIENCE** are provided by the electron microscope developed by RCA, allowing the photographing of objects smaller than the wave length of light. Illustration shows fine particles of commercial iron oxide, magnified 15,000 diameters. Useful enlargement photographically to 100,000 diameters is reported possible.

(*Above*) **EXPERIMENTAL TANK CAR FOR NITRIC ACID,** authorized by I.C.C., is built of an aluminum alloy to transport 95% acid. Four such cars are now nearing completion, will soon undergo thorough testing.



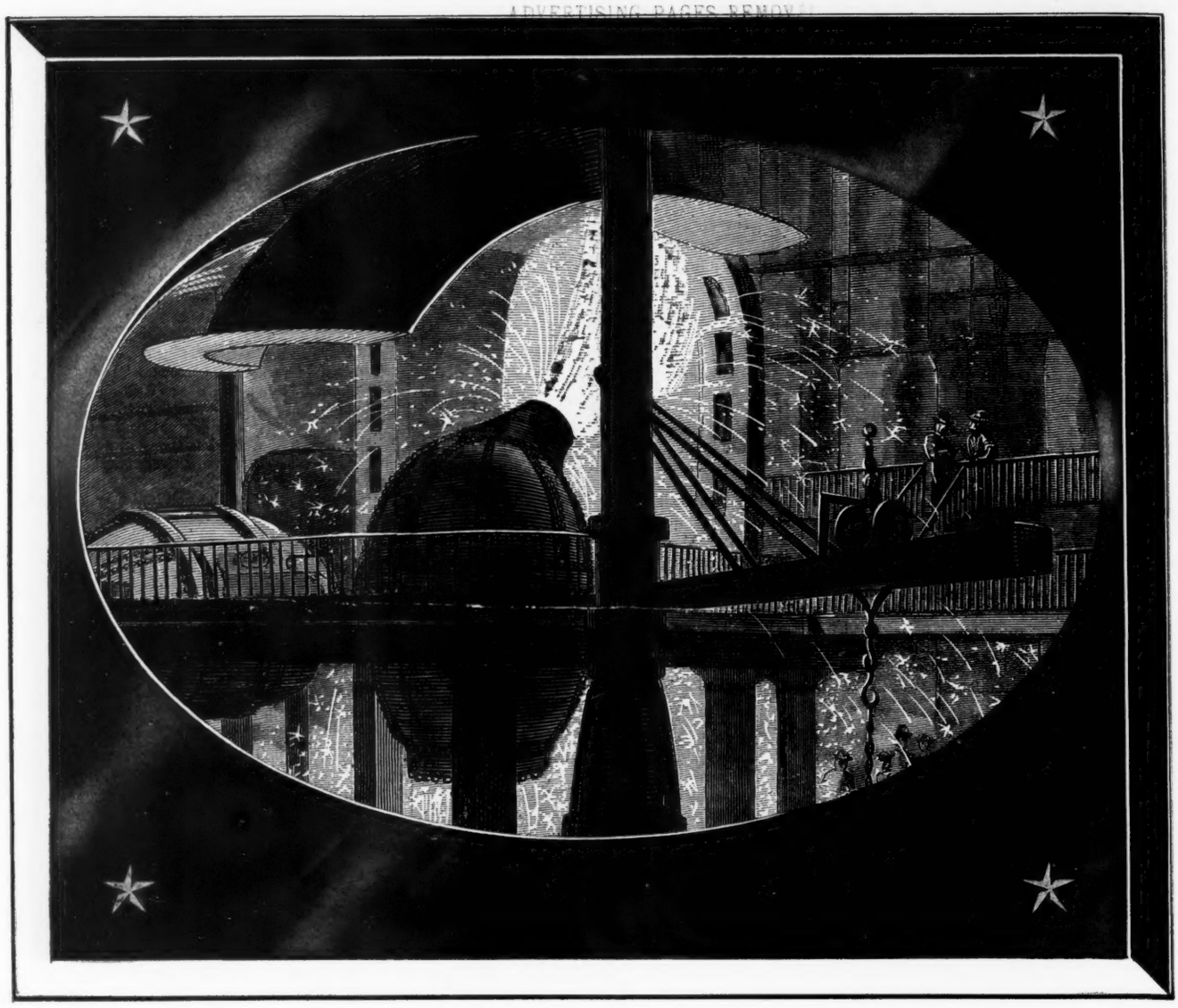
(*Above*) **PLASTIC PLANES** are a reality today. Parts are made of thin wood veneer impregnated with synthetic resins and then formed to desired shape under heat and pressure. (*Right*) 1800-degree heat, which burned a hole in metal, merely charred the plastic material slightly, did not ignite it. Plastic is said to be oil-proof and waterproof as well.

(*Above*) **TIMBER CLINIC** at U. S. Forest Products Laboratory, Madison, Wis., checks methods of rot-proofing wood. Effectiveness of preservatives is tested and then checked under actual service conditions. Shown here is a simplified method of treating fence posts against decay. Old inner tubes are inserted over end of post to be treated, filled with zinc chloride which is allowed to impregnate the post under its own pressure. Such treatment, reported to make posts "decay-proof" for ten to fifteen years, should be boon to farmers who use an estimated half-billion fence posts yearly.

American Cyanamid & Chemical Corporation

30 ROCKEFELLER PLAZA, NEW YORK, N. Y.

ADVERTISING PAGES REMOVED



They Started Something!

WHEN Henry Bessemer and William Siemens devised their processes for the rapid, economical production of steel from pig iron, they gave to steel the impetus it needed to attain its position as one of the most important of all engineering materials. For steel had been known to the early artisans of Damascus and Toledo—yet its high cost had limited its industrial utility. The low-cost production processes that made steel a commercially practicable material immediately increased its usefulness. And the increased demand in turn made possible the financing of further research, which has resulted in the wide range of alloy steels available today. Almost every basic industry makes extensive use of steel—as a raw material or as a vital part of building structures and manufacturing equipment.

Chlorine, too, was known for years before it attained its merited utility. When EBG engineers produced Liquid Chlorine for the first time in America, they made chlorine available in a form in which its properties could be successfully employed commercially. Municipalities throughout the country found in Liquid Chlorine an effective means for safeguarding public health by the purification of water supplies and the sterilization of sewage. And manufacturers of paper and textiles recognized the advantages of Liquid Chlorine as an efficient, economical bleaching agent. Pioneers in the production of Liquid Chlorine, EBG engineers have an unmatched background of experience in its manufacture. *You* can profit by that experience.

The first cylinder of Liquid Chlorine made by EBG in 1909.

EBG **Liquid Chlorine**

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CHEMICAL INDUSTRIES
The Chemical Business Magazine
Established 1914

PUBLIC LIBRARY
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One-Man Direction of the Defense Commission

EVERY day, yes even every hour brings further confirmation of the fact that the totalitarian states have prostituted the full force of modern technology to one end and one end alone—the art of mass slaughter on a heretofore unbelievable scale. By any other yardstick, except the present one, the army of France was reasonably well prepared to wage a defensive war, yet just 38 days were required by the Nazi forces, employing a new art of mechanized warfare, to completely destroy its effectiveness.

In 1937 we had the time, the money, the labor and the resources to create adequate defense in this country against any challenge to the freedom of the Western Hemisphere. But in 1937 our government, our politicians and most of our people refused to entertain more than a purely academic interest in what was transpiring abroad. Recriminations now are useless, except as they may dispassionately be utilized to determine what superhuman efforts and sacrifices must be made now. In 1940 we still have the money, although billions have been wasted, we have the labor, if labor can be aroused to the realization that it has been led along the wrong path by false prophets for their own selfish ends, we have, of course, boundless raw materials, but have we at this late date the necessary time to prepare? It is our honest belief that we have, but only if we exert immediately greater effort than is even now apparent.

We have a Defense Commission composed in part, as we pointed out last month, of industrialists and in part of those whose only claim to recognition is their interest in social reforms. The Commission's powers have not been too clearly defined, it does not possess sufficient all-embracing authority to cope satisfactorily with the present emergency, nor does it have one-man direction, with the other members acting as advisors on specific problems.

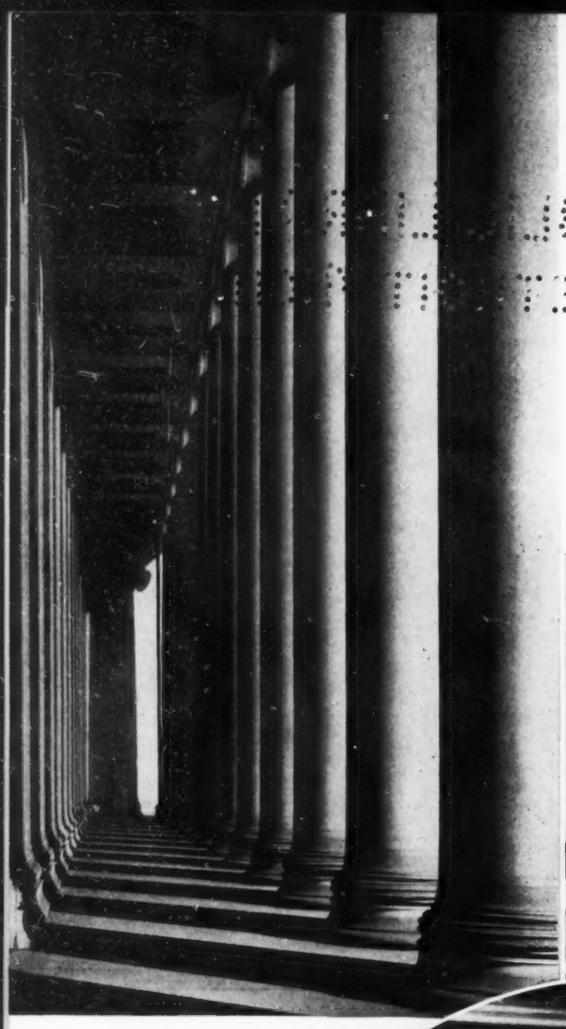
We had in almost every country involved in the World War, including our own, boards composed of outstanding executives. They did not get effective results because authority and responsibility were not vested in any one person. Ex-President Hoover performed signal service when he reminded us last month that we suffered untold waste of men, money, materials and time in the last war until Bernard M. Baruch was vested with complete authority to direct the War Industries Board. Then and only then did the industrial machine begin to function efficiently.

It is not difficult to believe that Hitler selected with great acumen the present moment for his major "blitzkrieg" when the United States is deeply concerned with the most important national election in the nation's history. But the selection of a President need not detract one iota from our preparedness program if patriotism is placed above party factionalism.

An aroused democracy is invincible—its wrath against those who internally traffic with its very existence can be terrible. We respectfully plead with President Roosevelt to revamp immediately the Defense Commission, give it the essential vital one-man control, divorce it entirely from any political ties or subservience to labor leader dictation.

We, as loyal Americans, no matter what our position in life is, are no longer in the mood for indecision, misinformation, deliberate misrepresentation or half-way measures. We will no longer countenance being told that military preparedness can be purchased for five billions of dollars when the cost is more likely to be fifty billions; that we can perform a miracle of industrial achievement with a forty hour week, greater even than that performed by totalitarian Germany, nor that commissions with no vested authority can correlate our industrial activity in an emergency, the like of which the citizens of this country have not been brought face to face with in 250 years.

Ours is but a single voice "crying in the wilderness." We ask each and every reader of this paper who agrees with this program to make known such opinion to the proper authority immediately. Remember time is the one serious (and even perhaps fatal) weakness that must be eliminated if we are to protect democracy in the Western Hemisphere.

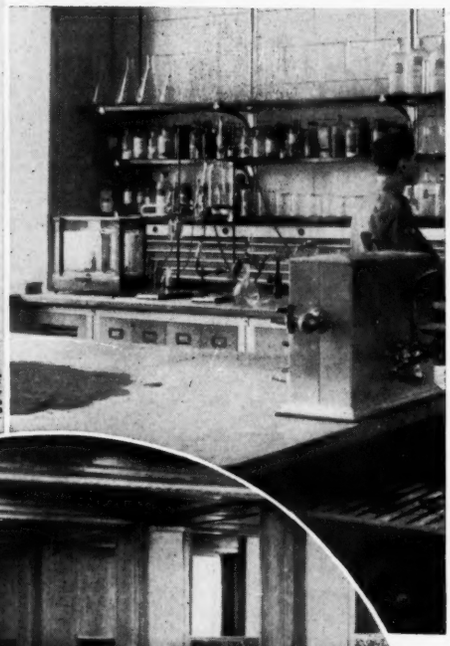


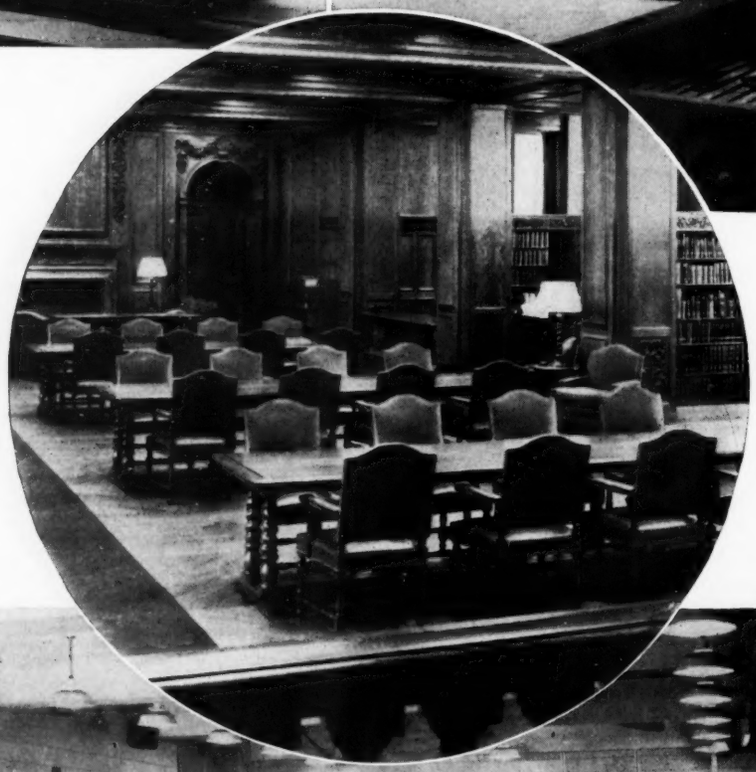
PURE RESEARCH

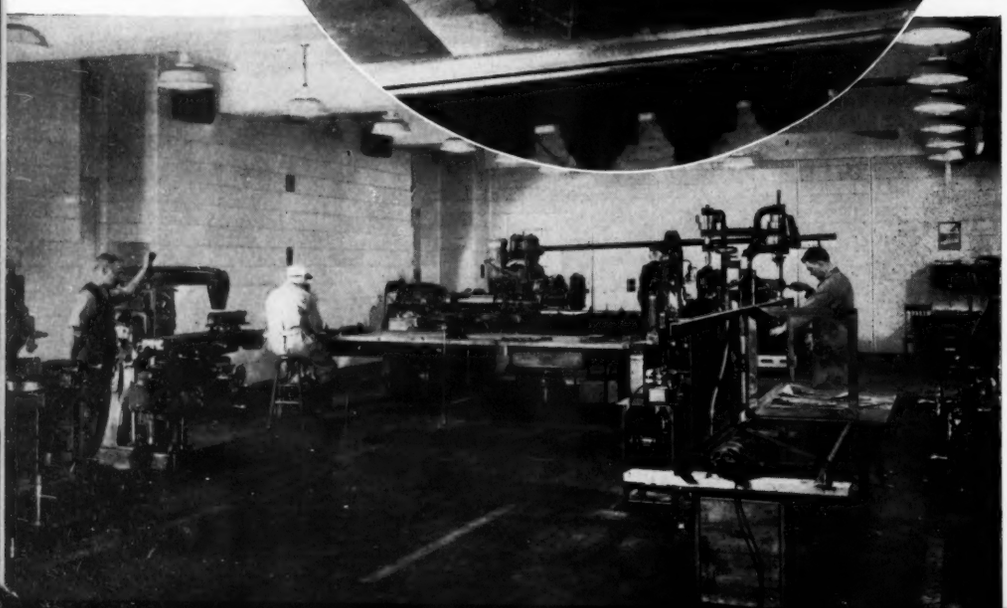
As an Aid to

By L. W. Bass

Assistant Director, Mellon Institute







Fundamental Research, Carried on in Such Laboratories As Mellon Institute, Views of Which Are Shown Left, Is Frequently Waved Aside As "Theoretical." However, Basic Investigation Often Proves a Worthy Handmaiden to Commercial Research, Dr. Bass Points Out. And He Presents Many Convincing Reasons.

THE widely used term "pure research" has given rise to much misunderstanding, not only on the part of the general public, but even in technical circles. It is often erroneously deemed to be a completely abstract pursuit of useless knowledge, entirely divorced from the ordinary affairs of the world. It is occasionally the object of mild ridicule, as though it were to be classed with the fine-spun logic of the scholastics of the dark ages. Because of the unfortunate connotation that has become attached to the expression "pure research," the adjectives fundamental, basic, theoretical, abstract, or disinterested are probably to be preferred to characterize this type of scientific investigation.

Fundamental research, even in its most abstract aspects, is a search for facts, and hence by its very nature is affording new information on the behavior of matter, much of which will eventually be of direct service to industry and to mankind. Knowledge acquired through such theoretical investigations is often secured by the research worker without any regard whatever to its possible practical significance; the latter constitutes an inherent value, in addition to the importance of the results to our general background of information concerning natural phenomena. The pedagogic value of basic problems in the training of young scientists

Industrial Progress

Mellon laboratory technician working on project concerned with development of new uses for cotton and its products. A considerable proportion of this work has as its objective securing basic data required by consuming industries.

is of great importance to industry; further elaboration of this subject will be omitted, however, since this discussion is concerned primarily with the significance of fundamental researches to industrial progress.

Progressive executives in the chemical industry, conscious of the dependence of their businesses upon factual information, have been far-sighted in recognizing their indebtedness to disinterested science. They have encouraged fundamental work in universities and institutions. They have included basic projects as part of their company research programs. Belief in the desirability of such work is continually becoming more general in the industry.

An exact distinction between fundamental research and applied or industrial research is extremely difficult to draw, even for those who are engaged in research administration. When analyzed, it is seen to rest mainly on the gleam in the investigator's eye. If this is a cold and ascetic glint of disinterested curiosity, he is a dyed-in-the-wool theoretical scientist. If on the other hand he has a dollar sign on his retina, he is a hard-boiled industrialist. In a given case, he might well be working on the same technical problem, using the same apparatus, employing the same technics, and conducting his work with equally rigorous scientific accuracy and thoroughness. The difference would lie in the purpose for which the project was undertaken, and the use to which the results are to be put.

Originally, research in abstract or pure science was rarely of a professional character. It did not receive financial backing as it was not undertaken for monetary return. In most cases the investigator was primarily a teacher. His scientific curiosity found expression in research, which he pursued as a hobby, disinterested and uninfluenced in the selection and prosecution of his problems.

Much research is still and always will be conducted in a similar way. Now, however, with special research professorships, research institutions, and research grants of various types, abstract investigations often receive direct financial support. They are not infrequently influenced to some degree as regards nature and scope. It is understood, of course, that such limitations need not in any way detract from the fundamental character of the projects, or, in other words, from their standing as contributions to "pure science."

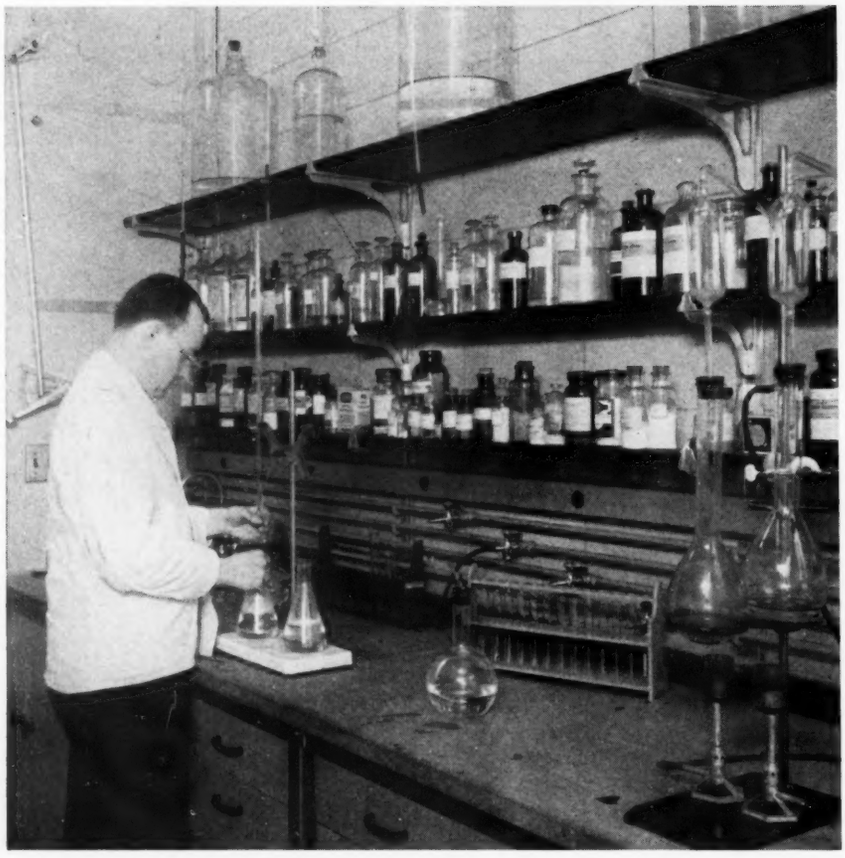
The nature of research projects carried out in industrial laboratories of course varies widely. Many problems are essentially indistinguishable in their technical aspects from those conducted as theoretical studies in an academic atmosphere. At the other extreme are investigations so closely integrated with practical details of operation that they have little purely scientific value aside from their immediate application, which, of course, may be of paramount commercial importance. All types of applied research are based upon the accumulation of knowledge which has been acquired through the years by academic and industrial scientists.

L. W. Bass

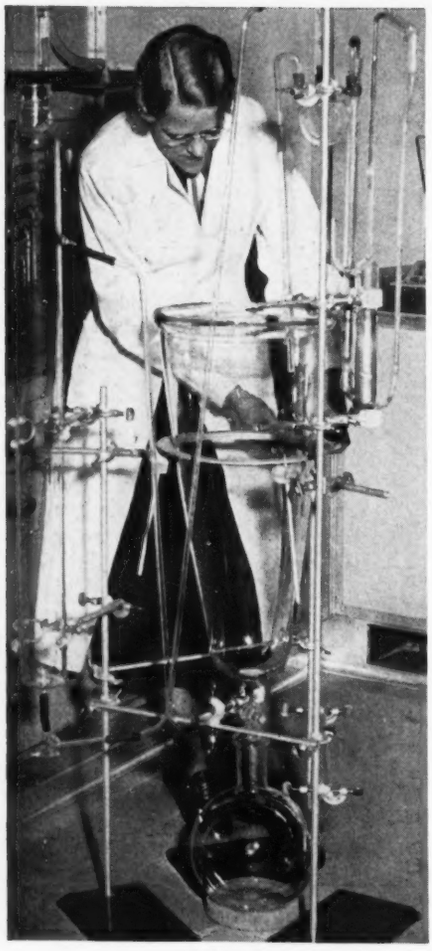
Member of Chemical Industries' Consulting Editorial Board

For the purposes of this general discussion of the relation between fundamental and applied research, it is pertinent to consider the costs of basic investigations, with particular reference to the chemical field. No comprehensive data on the subject are available, but information from several sources warrants the estimate that a relatively elaborate and thorough investigation requires an expenditure, including a reasonable overhead, amounting to several thousand dollars, on the average probably in the neighborhood of $2500. Such a study, for example, would form the basis for an article in one of the recognized journals devoted to the publication of original researches. This figure was reached from information pertaining to several academic, institutional, and industrial laboratories; no allowance was made for the pedagogic value of thesis projects. The estimate is presented with the full realization that it has been made on a limited amount of data and that it may be considerably out of line with the actual costs for a specific project, for an individual laboratory, or for some particular field of research.

Only the industrial research man himself can adequately evaluate his indebtedness to the accumulation of information made available to him through scientific publications. Each major project that he undertakes normally involves an introductory search of the literature as well as continued consultation of pertinent references throughout the course of his investigation. His heritage of knowledge from predecessors in the general field of his



Above—Pharmaceutical studies, especially fundamental investigations, are being carried on constantly at Mellon Institute.



For many years Mellon Institute has been advancing the fundamental knowledge of carbohydrates, cinchona alkaloids, and other organic derivatives.

research may represent an expenditure of several hundred thousand dollars. Admittedly, probably only a relatively small part of all the information in the articles he reviews is directly pertinent to his particular problem, but without this reservoir of published material—which one is inclined to take for granted—his progress would be discouragingly slow and the cost of conducting a research program would be proportionately high.

No reasonable estimate can be reached for the actual value of a fundamental investigation. Even in the case of an industrial research project, it is exceedingly difficult to designate that fraction of the financial return which should be attributed to the laboratory group. The commercial success of the new product or process is the result of the joint efforts of the scientists who laid the basis for its technology, of the development engineers who brought it to fruition, of the production and sales departments who made it a going proposition, and particularly of the management who maintained their belief in its possibilities.

It has been general experience that a period of several years is usually required to develop a new product or process to commercial stage from the initiation of the laboratory investigation. This situation places a heavy responsibility upon management, and particularly upon those responsible for the guidance of the research program, to foresee the nature of the technological changes that their industry will experience.

A frequent criticism of the theoretical scientist is that often he is not interested in subjects that are of importance to industry. In rebuttal it may be said that company laboratories themselves are in much better position to study problems that are directly pertinent to new products or processes, because of their closer contact with the practical limitations that must be taken into account. If the industrial scientist is working several years ahead of his industry, the goal of the disinterested researcher is properly in the still more distant future. It is not easy for company research executives to select their own most promising lines of attack; it is still more difficult for an academic investigator to prophesy those directions in which the needs will be greatest for basic information necessary for advances in theoretical or practical fields.

On the contrary, the view is tenable that scientists in non-industrial laboratories may misplace their efforts by attempting to be too practical. Pseudo-industrial problems are sometimes selected for which the background and experience of the research men are inadequate. Such projects, while on the surface representing a contribution to industry, are often of far less importance than would be an equal expenditure of thought and work on a more basic investigation on the same general subject.

Industrial progress is dependent on advances in theoretical science as well as in practical application. Much has been accomplished, particularly by contacts established at scientific meetings, to bring the fundamental and applied research men together for interchange of ideas. Such discussions are mutually beneficial. Through them the industrial scientist gains inspiration from his more cloistered associates, and through them the academic man becomes alive to the practical significance of his work to the world a few years hence.

At the beginning of this century American manufacturers relied upon chance ideas as the source of progress in their businesses. In four decades they have come to realize the necessity for carrying on organized industrial research in order to maintain their leadership.

Similarly, the applied scientist has in the past largely depended upon the fortuitous discoveries in the basic sciences to provide him with stepping stones to major advances in technology. It is extremely doubtful that limitations on the scope of theoretical research would be an effective means of directing discoveries into desired channels. But sympathetic encouragement of fundamental investigations can do much to aid in the provision of the basic information that will be required by the technology of the future.

C. D. ALCOHOL Formulas Again Are Born In Laboratories

By M. H. Haertel, ***Wood Chemical Institute***

During the Years When Wood Alcohol Was the Universal Agent, Completely Denatured Alcohol Formulas Were Developed Solely from the Standpoint of Efficiency and Economy in Manufacturing. However, in 1931, During the Waning Days of the Noble Experiment, Wood Alcohol As a Denaturant Was Frowned On By Washington. Then Followed Five Years in Which Producers Built Up a Huge Nomenclature to Glamorize Denatured Products, But Uncertainty in Formulas Nevertheless Took a Heavy Toll in Sales. Now With Restrictions Lifted, the Industry Is Going Ahead Again.

THE turbulent history of C. D. alcohol may be divided into three clearly defined periods, punctuated by changes in the basic denaturants and in the political constellations. The influence of politics has now happily subsided, and formulas are again determined only by consideration of government revenues and the necessities of industry. Appeal is directed to the laboratory test tube, and not to the politician's prejudice. Let us hope that this happy situation continues!

The first—and longest—chapter extends from the enactment of basic legislation, June 7, 1906, to the elimination of "approved wood alcohol" as of January 1, 1931. This was the time when the growing American chemical industry developed an insatiable thirst for solvents, and when winter driving of automobiles accentuated the anti-freeze problem. Starting from scratch in 1907, withdrawals reached an all-time peak of 65,876,702 gallons in 1926. Many denaturants were tried out and discarded; the only one to endure was "approved wood alcohol," known to the trade as "denaturing grade." This substance, in connection with various "markers" (ingredients that provide a warning smell or taste), was the basic denaturant in formulas No. 1 and No. 5,—the only formulas with any degree of permanency. Prohibition politics decreed its abolition in 1931.

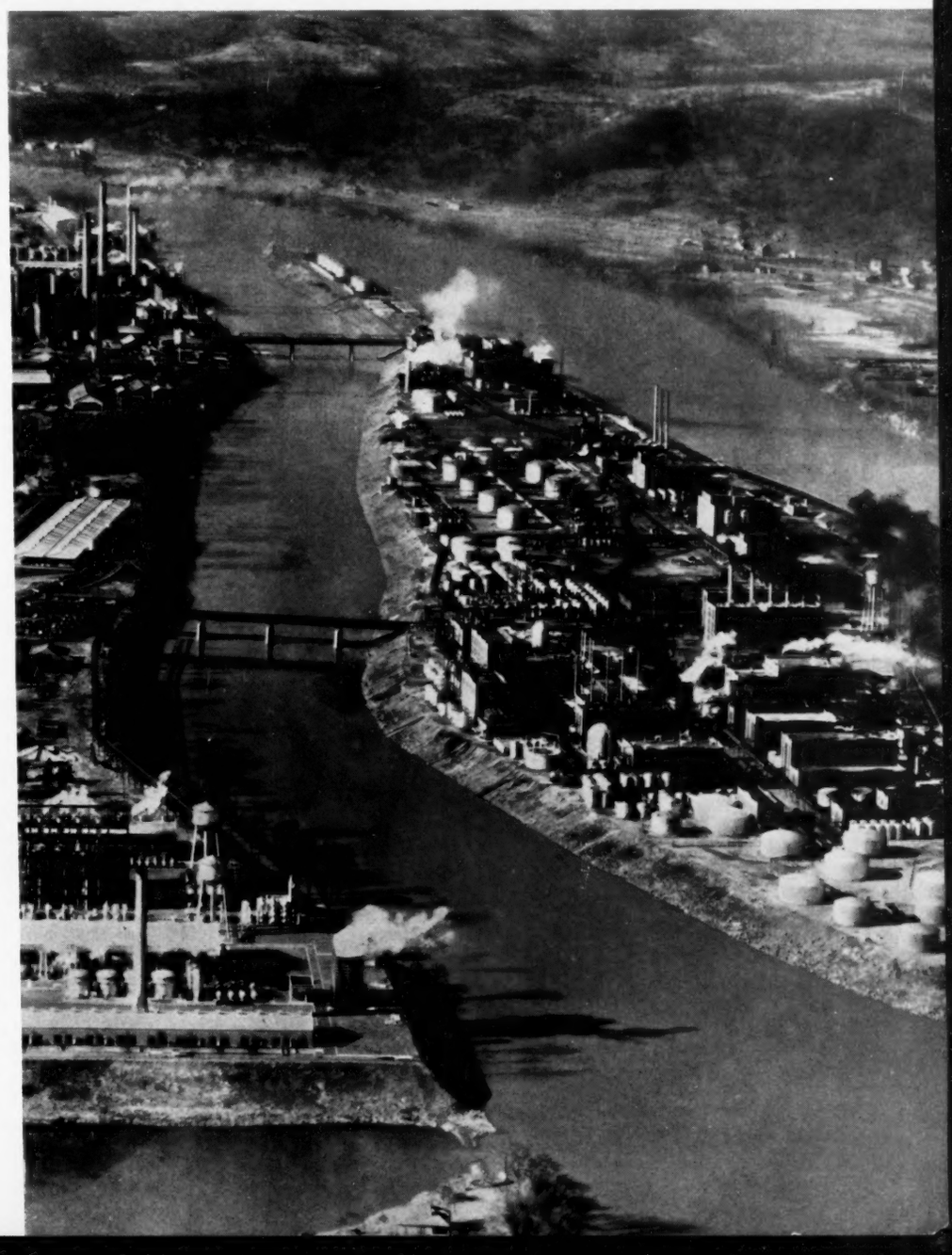
Then followed five years of confusion and precipitous decline.

Learned lexicographers of the future might shake their heads in bewilderment over the verbal innovations of this period. A few suggestions will be helpful.

"Pontol' and "tecsol' will be readily associated with their producers—du Pont and Tennessee Eastman Corporation; the chemist will detect aldehydes in "aldehol," and alcohol plus a higher oxidation product in "alcotate"; not much imagination will be needed to expand "denatol" into denatured alcohol, while "calorite" and "calol ethatate" (used in ethyl acetate) suggest California Oil Company. Pontol and tecsol, by-products, respectively, of synthetic and natural methanol manufacture, survived this experimental period. With a few modifications they are used today under the names of "Denol," "FD-13," "Hydronol," and "ST-115."

Outlook for all business was gloomy in the early thirties, but especially so for

Synthetic organic chemicals, including Alcohol, are manufactured by Carbide and Carbon Chemicals Corporation in this plant at Blaine Island, South Charleston, W. Va.

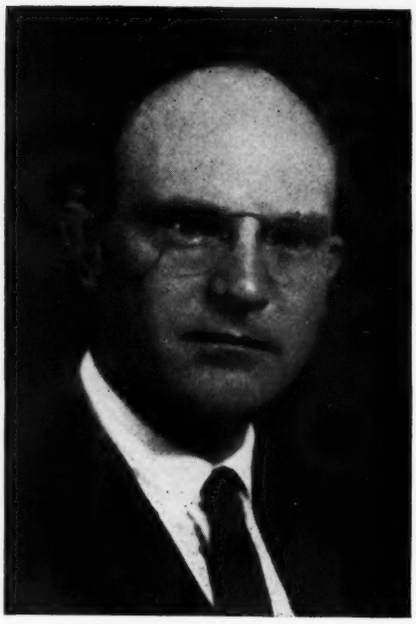


completely denatured alcohol. The uncertainty in formulas discouraged buyers; in these years, too, came vigorous competition in the anti-freeze field from rival products, especially ethylene glycol, glycerine, iso-propyl alcohol and both natural and synthetic methanol. Withdrawals in 1939 were only 17,205,000 gals. The situation was saved from complete disaster by CDA 10, the tecsol formula, which established the astonishing record of 1,700,000 gallons in 1933, 14,160,000 gallons in 1934, 32,216,000 gallons in 1935, and 34,417,000 in 1936. Specially denatured alcohol overtook the complete variety in 1932, and has consistently maintained its leadership; CDA must now be considered against SDA as background.

The malodorous, exotic denaturants developed in 1931 were of petroleum origin; they were obviously unsuited for introduction into paint and lacquer formulas containing the major alcohols. The government accordingly authorized for general distribution a proprietary solvent, based on SDA 1 (100 parts of ethyl alcohol and 5 parts of approved wood alcohol) further denatured with 5 parts of denatured ethyl acetate and one part of gasoline; sale of this mixture as anti-freeze was prohibited.

Former CDA 1 business moved to SDA 1. The merits of the new solvent and freedom from vexatious bonding requirements attracted additional consumers. SDA 1 moved up from 7,399,000 gallons in 1930 to 25,157,000 gallons in 1937. From this peak it declined to 18,422,000 gallons in 1938, recovering to 22,892,000 gallons in 1939, following closely the general index of business activity.

The desire on the part of government officials to increase the protective features



M. H. Haertel

of the CDA formulas and to decrease their malodorous character culminated in the revocation of the three existing formulas on July 1, 1936, and the authorization of three new formulas, as follows:

To every 100 part by volume of ethyl alcohol (not less than 160° proof) add—

For formula No. 11:

Pontol-K	3	parts
ST-115	3	"
Gasoline	1	"
Agdite or	0.5	"
Hydronol	1	"

For formula No. 12:

Pontol-K	4	parts
Methyl Isobutyl Ketone	2	"
Gasoline	1	"
Agdite or	1	"
Hydronol	2	"

For formula No. 13:

ST-115	4	parts
Methyl Isobutyl Ketone	2	"
Gasoline	1	"
Agdite or	0.5	"
Hydronol	1	"

The name Pontol-K was later changed to "denol"; ST-115 grew out of the original "tecsol"; agdite is of petroleum origin and hydronol derives from methanol synthesis. Permission is granted to add an approved deodorant.

Formula No 11 was revoked as of July 1, 1938, and replaced by—

Formula No. 14:

FD-13	5	parts
Methyl Isobutyl Ketone	2.25	"

FD-13, a synthetic methanol product, is related to denol.

Dr. H. J. Wollner, Consulting Chemist to the Treasury Department, presented the basic principles of denaturation in a paper read before the Spring Meeting of the American Chemical Society, at Chapel Hill, North Carolina, April 13, 1937.

Formulas for Anti-Freeze

These formulas are used directly for anti-freeze purposes, and also as foundation for proprietary anti-freeze preparations. Such proprietary compounds are produced by adding dyes, rust inhibitors, petroleum distillates, and other materials to completely denatured alcohol, in accord with formulas that have government approval. From 40 to 60 per cent. of all completely denatured alcohol is marketed in this manner.

To restore denatured alcohol to its proper competitive position in the anti-freeze field, the government, anticipating the 1939-40 season, authorized the distri-

Scene in main denaturing room of U. S. Industrial Alcohol plant. Workers are filling 54 gallon drums.

View of 50,000 gallon fermentation tanks at Commercial Solvents Corporation, Terre Haute plant.

Recent Withdrawals of Completely Denatured Alcohol

Fiscal Year Ended June 30	No. 10	No. 11	No. 12	No. 13	No. 14	Total
1937	2,018,046	8,619,984	9,390,663	3,331,276	.....	23,484,104
1938	142,422	13,772,151	7,078,847	3,843,457	892,199	25,727,946
1939	4,751	544,454	1,038,839	6,051,829	9,564,742	17,204,615
July 1, 1939 to March 31, 1940	4,706	12,557	256,560	8,864,108	4,852,304	14,090,235

Monthly Withdrawals of Completely Denatured Alcohol and SDA No. 1

	C. D. A.		S. D. A. 1	
	1938	1939	1938	1939
June	2,437,779	813,449	1,312,254	1,814,000
July	1,221,990	527,689	1,584,709	1,857,200
August	1,464,124	481,462	1,817,187	3,053,486
September	2,553,002	2,182,218	1,845,109	4,076,634
October	3,984,655	5,175,232	2,386,951	3,464,655
November	2,989,276	2,902,792	2,004,358	3,078,045
December	2,109,668	692,714	2,505,441	3,575,271
	1939	1940	1939	1940
January	444,784	1,318,113	1,642,523	2,089,196
February	361,310	412,653	1,403,024	1,628,511
March	480,384	.....	1,769,018	.....

bution, in sealed cans of not more than one gallon each, of a proprietary anti-freeze, based on SDA formula No. 1, containing 5 parts of approved wood alcohol. In addition to the denatured alcohol, the mixture contains dyes, rust-inhibitors, petroleum distillates, and other ingredients that prevent beverage use by even the most depraved addict. The finished products are sold under trade names and under labels bearing no reference to alcohol. While the full effect of this new anti-freeze cannot yet be recorded, monthly withdrawals of SDA No. 1 from June 1939 to date are indicative.

The months July to December, inclusive, constitute the season for anti-freeze withdrawals. Owing to severe weather conditions this past winter, another month's business was added. A comparison of the past two seasons, with allowance for the effect of improved business on solvent requirements, permits an estimate of the stimulation brought about by the new anti-freeze. From July 1938 to January 1939, inclusive, 13,786,278 gallons of SDA 1 were withdrawn; from July 1939 to January 1940, inclusive, 21,194,487 gallons, an increase of 7,408,209 gallons, or about 55 per cent. Perhaps half of this improvement was in solvent withdrawals; the balance, or 3,500,000 gallons, must be attributed to anti-freeze. Completely denatured alcohol withdrawals in the two seasons were 14,767,499 gallons and 13,280,220 gallons, respectively, practically all for anti-freeze.

Combining the 1939-40 CDA with 3,500,000 gallons, of SDA 1, it develops that in this season a total of 16,780,000 gallons of denatured alcohol was withdrawn for use in automobile radiators, as compared with 14,767,499 gallons a year before, an increase of slightly more than 3,000,000 gallons, or about fourteen per cent. The actual use was of course materially greater, since a large part of the CDA withdrawals in preceding months was in anticipation of anti-freeze requirements.

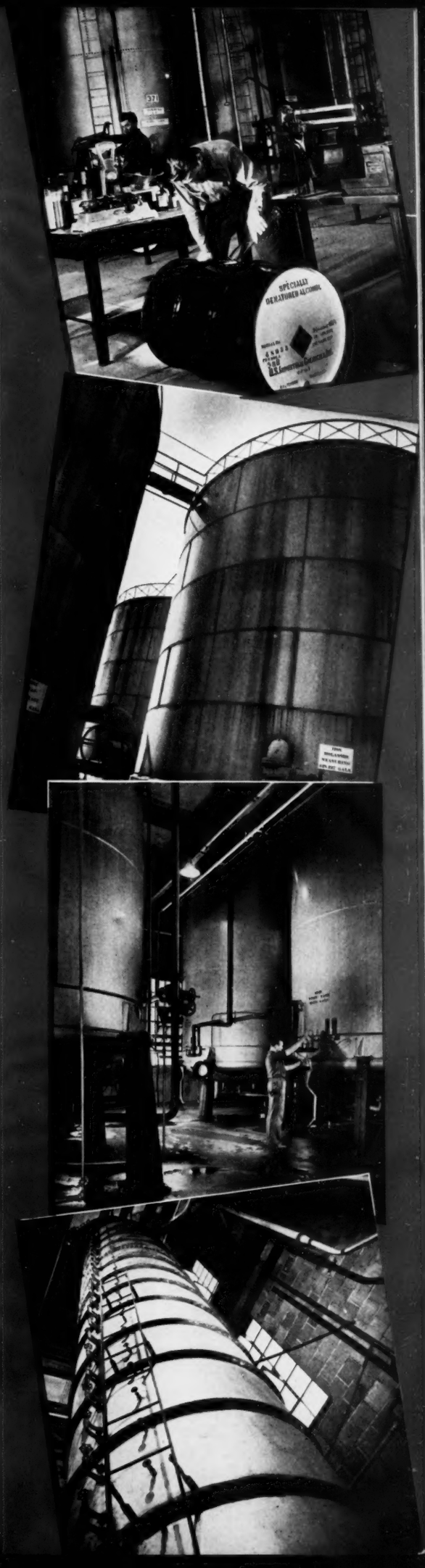
Producers of denatured alcohol have enjoyed a marked increase in business following introduction of the new formulas and liberalization of SDA 1 controls. How has the government fared in the performance of its primary duty of protecting revenues, i.e., preventing diversion to beverage channels? Bootleggers publish no trade statistics, so we must depend on inferences.

It may be safely assumed that drinking of the new formulas and preparations without preliminary manipulation is negligible. Manipulation requires good equipment and skilled supervision. The government now has the authority to trace completely denatured alcohol; drums are numbered, bulk shipments are reported. Enforcement efforts find greater popular support since repeal. Common knowledge tells us that practically none of this alcohol is finding its way into bootleg channels.

Number of "cleaning" and "cracking" plants seized during recent years

Fiscal year 1936	46
1937	24
1938	10
1939	7
July 1, 1939 to Feb. 29, 1940	2

Formula research, close supervision and energetic policing get results. Despite high excise taxes on liquor, the diversion problem has been brought under almost complete control.



Scenes at U. S. Industrial Alcohol plant. Top to bottom—Denaturing single 54 gallon drum according to special SD formula. Outdoor storage for molasses. Preliminary stage in fermentation process showing inoculation of molasses with yeast. One of twenty huge distillation columns.

Pictures courtesy U. S. I.

Sales Development—

A New Technique

Part III

By Logan Grupelli, Manager, Market Development Department, and J. Miskel, Assistant, National Oil Products Co. Inc.

HERETOFORE, we have discussed Market Development from the point of view of its functions and position in the company organization. However, little was said of the methods used to collect and utilize technical and marketing data.

Of the methods employed surveys, especially the market survey, is without doubt the most useful in the sense that it is determinate, not forgetting, however, the importance of the literature and patent surveys.

As was argued earlier, the literature must be constantly under surveillance in order that the fullest benefit be derived from this indispensable source of information. The literature survey should be conducted by a well-trained library staff which should keep abreast of developments in the fields in which the company is most concerned, be it fat, petroleum, or pharmaceuticals, or any one of the many other possible interests.

If the library work is reasonably complete, well indexed, and "cross-referenced," it becomes an important tool for use in market development work.

We have found it necessary to have our patent position determined by competent attorneys, after we have reviewed the literature and before we embark on our market survey. In this way, it has been found that an investigation may be narrowed and the collection of needless information avoided. To dismiss the library and patent survey with so few words may seem rather sketchy. However, we feel that dwelling inexpertly at length on highly specialized fields would be presumptuous in view of the many excellent studies extant and available to the interested reader.

Turning now to the Market Survey as the active instrument in sales development work, we find it advisable for our purposes to subdivide it into two types; namely, the short and long-term survey.

The first may be considered as a cursory estimation of markets in view of an indicated possible research trend or competitive activity. Then again it may involve a preliminary product analysis, or a pressing industrial problem. This type of survey is more of a foray than a comprehensive study. It might be termed market sampling. Let us not, however, minimize the importance of the short-term survey, for without it, any attempt at keeping close track of research and market trends would be purely an academic effort.

During the Past Two Months, Sales Development As a Merchandising Unit Was Discussed in This Series. These Authors Told Why Centralization of Marketing Information Was Important; Then How Such a Department Could Be Organized. Now They Tell How It Can Function To The Best Possible Advantage.

The short-term survey aided by salesmen's reports provides an effective means of keeping in touch with the problems in industry. This surveillance furnishes the information upon which research projects may be recommended.

In a similar manner, the short-term survey is used to appraise in a preliminary way the feasibility of marketing new laboratory developments. Such a survey very often indicates the relative presence or absence of a market for the product and the advisability of continuing development or not. Products that promise small, unprofitable markets may be eliminated from the research program. On the other hand, a promising product may be intensified to such an extent as to realize profit in the shortest possible time.

The second type of market survey approaches what is the generally recognized form of survey used by many manufacturers, especially those engaged in selling consumer products or services. This type of survey is definitely a long-term study. Unlike the short-term, it is comprehensive and inclusive in scope.

Once development, and engineering, are completed and patent factors have all been determined for a product that a short-term survey indicated as having market possibilities, the next step should be a long-term survey. This is undertaken to evaluate completely all market factors, and includes separate studies of the product, raw materials, market size, buying habits, competition, distribution, price and other related factors. A report is then made to the sales and research executives, together with appropriate recommendations.

Requires Careful Planning

A long-term market survey requires careful planning. If the planning is not handled properly, the survey will very likely "bog-down" later on or at best consume an inordinate amount of time and effort. As a corollary it might be added that a poorly planned survey usually ends up with a wealth of straggling ends and unanswered questions. A report prepared on the basis of such a survey will probably be plagued by one or more sheepishly submitted addenda.

Right here we wish to make an important distinction, for so far the reader may have come to the conclusion that we are merely trying to describe some well-known market research procedures with

the idea of making them fit into the market development scheme. Were this true we will have said all that could be said. But such is not the case.

True, much of our market survey work is carried out along conventional and established practice, following the familiar check chart procedure of searching out market size, buying habits, etc. Yet, in market development work, this constitutes only a part of the planning.

It involves much more than that; it is a dual job. In short, the technical character of the markets demands that we superimpose a technical framework on the market check chart as a base.

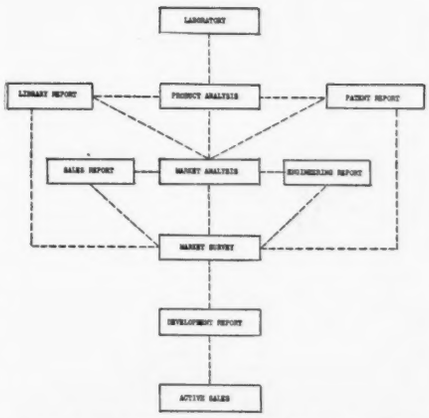
Since the long-term survey is usually undertaken as explained above after the product has been developed, it naturally follows that the technical framework must resolve itself into a scheme for determining the technical fitness of the product with respect to the peculiarities of the market. This is an important phase of the work, for after all we are dealing with an experimental introduction of new chemicals into old or new markets.

To illustrate this point, our laboratories some time ago presented us with a product whose properties forecast its definite utility in a number of industries. As the product was the result of a general research program where its development was not closely allied to any one specific industrial problem, its properties were duly noted, recorded and placed in our files. It was, therefore, our task to determine and suggest variations of the product and its properties in the light of contemplated markets.

Asked Suggestions on Samples

Samples of the product were submitted to the sundry potential consumers for their suggestions. For instance, a cosmetic manufacturer found the product attractive in price but recommended that the odor and color be improved and the product be appraised from the standpoint of dermatology and toxicity. A manufacturer of agricultural sprays ignored color and odor but stressed factors relating to plant injury. A manufacturer of plastics overlooked the slight odor, but was much concerned over color and the possibility that the product might have poor light stability and water-resistance. However, several manufacturers were found who considered the product applicable in its present state of purity to their operations and fortunately most of them intimated that the additional cost that would be incurred in standardizing the product in a higher grade would not preclude its use in their processes. Others felt that even this increase would make any extensive use of the material in their operations prohibitive.

Based on these findings, it was recommended that three grades be set up as the basis for the market survey to be



This chart traces steps taken by new product from time it leaves laboratory until it is placed on market.

subsequently undertaken: First, a cosmetic grade; second, a standard technical grade covering most of the uses investigated; and, finally, a crude grade to satisfy a market where price considerations were paramount.

Assuming now that we have established to our own satisfaction the technical as well as market factors to be checked, we now are prepared to resort to the time-honored personal interview as a means of checking the market first hand.

As far as interviews are concerned, the long-term survey as used by the chemical manufacturer has some advantages over that employed by those fabricating consumer goods. First, the number of interviews required are usually a fraction of those necessary to determine whether or not the American woman prefers a liquid dentifrice to a paste or powder type product. For the same reason one valuable survey tool, namely: the mailed questionnaire, is lost to the chemical marketer since this device requires a fairly large study group. A return of 5 or 10 questionnaires out of, say, 100 manufacturers would be a sketchy basis upon which to draw a conclusion that might involve a large sum of money. Second, there is the added restriction that any questionnaire by nature must be such as to exclude debatable questions and rely entirely on a positive or negative statement foregoing what often amounts to important opinions and personal coloring. In short, the use of the questionnaire in chemical markets should be undertaken only after due appreciation of its value, since it has been our experience that its indiscriminate use tends to over-simplify a problem seriously affecting accuracy.

In dealing with chemical markets, the investigators are very often able to collect distribution data much more readily than an investigator in consumer-goods markets. For example, through a proper choice of interviews, a national or metropolitan coloring may be given the survey at will. Enough data may be collected at the general offices of several large manufacturers having national outlets to obtain data having a more or less national complexion. However, if purely metropolitan angles are being investigated, organizations with national distribution should be avoided and the survey confined to purely local manufacturers so as not to distort the picture with factors of a more national significance.

The number of calls made on any one particular phase of the general problem under study, should be of such a magnitude to insure the accuracy of the information collected. There is, however, no way to determine in advance whether 5, 10 or 100 calls will be required to determine a fact accurately. The true facts become apparent only during the progress of the investigation as each piece of information fits into the proper category, strengthening the accumulated evidence or standing out as an anomaly that must be rechecked. Finally, in this process we arrive at a point where all facts tend to coincide and we are then reasonably sure of our premise.

Questions Most Important

In carrying out the interview itself, it is essential that the basic questions to be answered be clearly established in the interviewer's mind. This does not mean that a disconcerting interrogation is necessary, since a frank statement of purpose and a pleasant discussion of the problem with the person being interviewed is naturally preferable. Frankness in any case is paramount and if conveyed in a convincing manner, a good deal of suspicion and misunderstanding will be avoided. In this regard, the investigator should appreciate that the natural assumption of the person being interviewed is that questions are not asked and information sought without substantial reason. It follows that the person being interviewed feels it his prerogative to refuse to be cooperative if the investigator attempts to mask his purpose in collecting the data for it must be realized that he is asked to contribute information relative to the conduct of his business or some facts he may have acquired through years of experience in his particular field. Therefore, any contributions he may make to the study at hand through a feeling of goodwill is given in the sense that he or his colleagues may benefit at some future time due to his condescendence.

A religious adherence to a policy respecting without qualification the confidence given in good faith by the person interviewed is essential. Retribution due the pandering of confidential information hither and yon will not be long in coming home to roost for the offenders. On the other hand, the interviewer can at times reciprocate by making helpful suggestions in return for the help extended him providing the information is of a general character, or if of non-confidential nature obtained in his own laboratory.

Typical scene in the research laboratories of National Oil Products. Close cooperation between the research department and market development work is essential to successful operations.

In the course of interviewing a number of persons in any given field, a good deal of contradictory information is likely to be amassed. This brings up the question of the relative weight that must be given each interview. An experienced investigator very often can estimate after each interview the value or weight that can be given the particular set of data collected. Ultimately it must be weighed in relation to each other interview on a statistical basis eliminating that which is obviously extraneous in the picture as a whole.

Returning to the broad concept of surveying the general market for a product, it is apparent that a good many individual market factors must be considered in detail. Each represents a separate problem to be considered before any general delineation can be drawn. However, the number and importance of these individual problems vary with each product or market being investigated and, of course, are determined as part of the general planning mentioned earlier. Nevertheless, there are basic market problems more or less common to all products forming what might be considered the skeleton of any market investigation.

The first basic survey phase would necessarily include a general appreciation of the market being studied and its relation to the product under investigation, including the relative size of the market. The portion of this total that would represent the probable participation enjoyed by the new product or line and the estimated time that would elapse before this quota might be expected to be reached. It would also include consideration of what might be termed the geographical concentration of the potential market and whether or not the market promises to be a growing, retarding or static one.

A good deal of information concerning an appreciation of the market may be obtained through the use of government and private agency statistics, sales records of the company itself, and finally through interviews or questionnaires.

The second broad group of factors that are generally investigated encompass what might be termed the purchasing and price phases existing in the market under survey. These considerations would include investigation of the so-called buying policy existing in the market, such as seasonal purchasing service expectations, the relation of price to quality, the person or persons usually involved in any sale, the existence of discounts, allowances and reciprocal buying, shipping requirements, federal and state laws, etc. Whether or not the predetermined or expected price will permit entering the market in view of the pressure exerted by some or all of these factors on volume and sales effort will naturally be an important factor in the final judgment of the market.

Many times, a decision to enter a market with a competitive product at a price lower than that prevailing with the idea of increased sales is unwise particularly if all of the limitations set up by the purchasing policy in the market are not considered carefully. In the same manner a failure to realize the volume limitations of a market may lead to the misconception that the use of the product or products will increase proportionally as the price decreases. However, it is generally found that in a small-volume, high-price market, service and goodwill factors are often more important than price alone.

The third broad phase of any market survey usually includes a study of the potential competitors, their number, location, and an estimation of the portion of the market they enjoy. A study of their goodwill, price structure, etc., may be a deterrent or incentive to entering a new market, depending on the newcomer's ability to capitalize on the mistakes made by the prospective competitors in the past.

The fourth general phase includes some study of distribution. The study of distribution may be a relatively simple or highly involved affair, depending on whether the new market parallels present outlets and therefore may be handled by established distribution channels and the existing sales force, or whether it involves a divergency into entirely new fields. If the latter is the case, time-consuming studies must be made to determine what recommendations will be made with respect to distribution and its allied problems such as the relation of freight rates and existing distribution centers and in turn their limitations on the size and geographical location of the market.

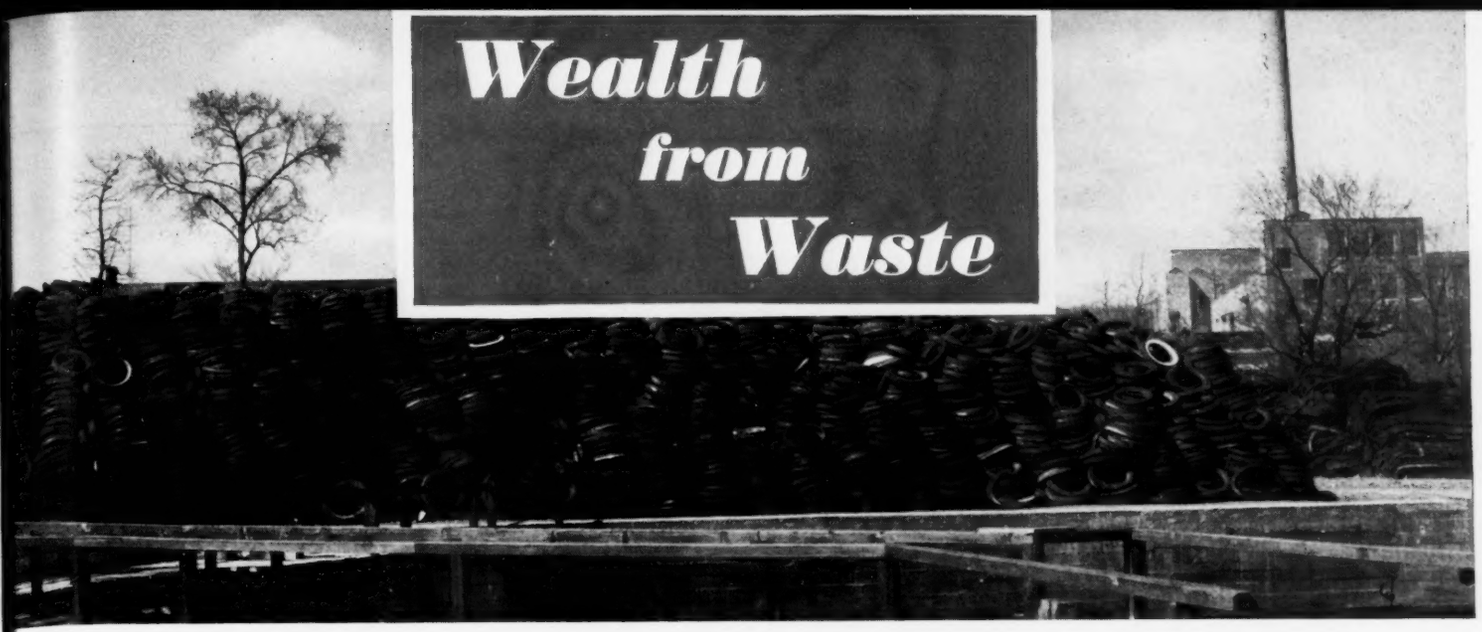
Finally, the company's reputation in the new field is very important since it can be used as a basis on which to estimate, in part, promotion costs. For instance, if the new market is one ordinarily entered by the company, additional promotion expenditures should not be excessive, while entry into an entirely new field may necessitate a fairly extensive promotional program.

In an appraisal of the company's position in a market, while it may be disconcerting, it will be nevertheless valuable for the investigator to discover early in his survey the standing of his company in a particular field. If it is found that the company is regarded as a novice in the new market, an open minded and ready appreciation of such an existing condition may detract from the survey's optimism but will pay dividends in accuracy.

The results of a survey after careful tabulation would seem to be almost self-evident. However, such is not the case. A considerable amount of logical induction and deduction is usually necessary; that is, a balancing of the evidence so as to set up sound conclusions. The chances of going astray in drawing conclusions are many. A few of the obvious ones would be:

1. Insufficient planning. 2. Too few interviews. 3. Interviews too restricted. 4. Failure to consider evidence on a common denominator. 5. Positive assumptions made because data to the contrary is lacking.

To sum up the value of the market survey, we must realize that the ultimate goal of the Market Development Department is to give an accurate and practical interpretation of all the data obtained on any special project. Since the survey can augment, clarify, check, and confirm the correctness or incorrectness of much of that data, it is the one method par excellence by which this practical interpretation may be obtained.



Wealth from Waste

RECLAIMED RUBBER A Little Publicized Domestic Source of Supply

While Research Has Been Striving Feverishly to Create Synthetic Rubber as an Aid to National Self-Sufficiency, Rubber Reclaiming Companies, Without Fanfare, Are Producing Around 200,000 Tons a Year.

WHEN war defense measures these days the world over stress the importance of economic self-sufficiency, we are being continually reminded that one of the major industries of this country—the manufacture of rubber goods, is dependent for its chief raw material on a product obtained from the opposite side of the globe.

Last year the United States imported over 600,000 tons of rubber, chiefly from the Far East, and made from this rubber over 57,000,000 automobile tires and 51,000,000 inner tubes, to mention just the two products which lead in the consumption of this commodity. Much scientific research work has been done to develop substitutes for rubber, but the total volume of substitutes consumed in 1939 was only about one per cent. of that of crude rubber. This includes natural substitutes such as Guayule Rubber produced from a shrub grown in Mexico, as well as the rubber-like synthetics produced here such as Thiokol, neoprene, Perbunan, etc.

There is a 100 per cent. American industry, however, which has had little publicity, but which is producing rubber in this country in real sizable quantities. We refer, of course, to the manufacture of reclaimed rubber from rubber scrap or waste—an industry which produced around 200,000 tons last year, and has available capacity to produce considerably more if needed. This industry employs thousands of men directly, other thousands indirectly. Its biggest raw material is coal for producing the enormous power and steam required in converting the rubber scrap into finished material. Other raw materials used on a large scale are caustic soda, sulfuric acid, pine tar, crude naphtha and a great many more.

The rubber industry has been mindful of its waste problem even from its early beginning. In 1847 a British patent was granted to Hancock and Phillips covering a process of utilizing waste vulcanized rubber by dissolving the scrap in turpentine or naphtha. Ground rubber waste in powdered form was incorporated into various rubber mixings soon afterward.

By F. E. Traflet

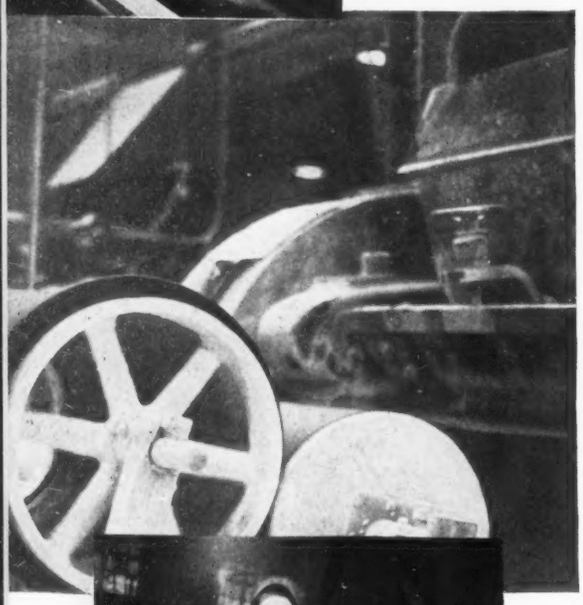
Vice-President, Pequanoc Rubber Co.

It was soon found that if the ground material were treated under steam pressure with oils or solvents, a plastic mass was formed which could be used in many rubber compounds where the unplasticized material had not been suitable. The manufacture of this shoddy, as the new product was called, was carried on by individual rubber manufacturers and was the beginning of the present reclaimed rubber industry. Today approximately thirty-five rubber reclaiming factories produce an amount of reclaim equal to about one-third of the crude rubber used in this country. About 86 per cent. of the reclaimed rubber produced in these plants comes from nine large factories situated around the metropolitan areas such as New York, New England, Akron, Buffalo, St. Louis and Los Angeles. Proximity to raw materials is the main reason for these metropolitan locations, inasmuch as more rubber goods (chiefly tires) are worn out in these more thickly populated areas, and transportation charges make up a large part of the cost of scrap rubber.

Although deterioration of rubber is usually the result of oxidation, the majority of rubber articles end their useful life due to wear or damage. These discarded articles are collected along with other waste materials by the small junk dealer who puts the rubber scrap together and sells it to a rubber scrap dealer. Garages and automobile service stations, which collect large quantities of tires and tubes, usually deal direct with the rubber scrap dealer, who in turn sells to the reclaimer in lots of hundreds or thousands of tons. Some items of rubber scrap, such as shoes,

Left — Figure 1, rolling ground scrap on heavy mill rolls.

Below—Figure 2, sheets built up in laminated form on drums.



Left—Figure 3, removing wire bead from scrap tires.

Below—Figure 4, reclaimed rubber slabs about 30″ x 4″, and about 1″ thick.

Left—Figure 5, loading ground scrap in pans in open steam heater to be "devulcanized" for a period of 8 to 24 hours at 325 to 400° F.

are seasonable, usually being collected more freely in the spring when milder weather brings a discard of rubbers and galoshes used in winter. Furthermore, in the manufacture of rubber articles there are trimmings and overflow from molding operations which find their way to the rubber reclaimer via the scrap rubber dealer.

Purchases of rubber scrap are made in accordance with accepted standards of packing, so that all grades are grouped separately and deduction made from purchase price if material is included which does not conform to these standards.

From discarded tires, inner tubes, or hot water bottles, as the case may be, the reclaiming plant produces reclaimed rubber in slabs about 30″ x 40″ and about 1″ thick (fig. 4), and this is done chiefly by one of three processes—Pan, Acid, or Alkali. The Pan process, sometimes called the heater or open steam process, is usually used for scrap containing no fibre. The scrap, after being chopped with high speed revolving knives or ground on a rubber mill is then screened through a suitable mesh which may be as coarse as 1″ or as fine as 50 mesh. The screened stock is usually run over magnetic separator at this point to remove any iron or steel particles. Next, the material is usually washed and riffled to remove any other foreign metal or sand adhering to the rubber. Following this the ground scrap is intimately mixed with oils or solvents such as pine tar, mineral oil, crude naphtha, dipentene, etc., and is then loaded in pans (fig. 5) in an open steam heater holding 5-10,000 pounds and "devulcanized" for a period of eight to twenty-four hours at 325° to 400° F. Devulcanization is, of course, a misnomer, the action being chiefly plastication due to depolymerization. The ground scrap coming from the devulcanizer, now in cake form, is subsequently dried, milled into a sheet on heavy mill rolls (fig. 1) or batched in internal mixers. It is forced under high pressure through a fine screen, 20-60 mesh, and finally refined, paper thin, on other heavy refiner rolls, from which these thin sheets are built up in laminated form on a drum and cut off when the desired thickness is obtained (fig. 2).

Remove Beads First

When the source of scrap is tires, the first operation necessary is to remove the wire bead (fig. 3). The tire is next chopped fine by cutters or corrugated steel rolls and then defiberized, usually by sulfuric acid (Acid process), or caustic soda (Alkali process). In the Acid process the stock is boiled in open lead lined tanks. This operation converts the cotton into hydro-cellulose which is then washed out. The rubber is neutralized with alkali at this point or may be boiled in an alkaline solution. After this, the excess water is removed mechanically by squeezing, and the fibre-free scrap is then treated as in the Pan process.

In the Alkali process the scrap is treated with caustic soda in a closed digester in which the "devulcanization" operation takes place simultaneously with defiberization. A saving in cost is thus obtained, although Acid process reclaims for some purposes are preferred in spite of their slightly higher cost. After digestion, the Alkali stock is washed, dried and finished in the same manner as the Pan and Acid process reclaims.

Consumption Outstrips Reclaim

Due to fibre and bead losses, the amount of rubber scrap consumed yearly runs considerably higher than the amount of reclaimed rubber produced, in spite of the fact that the reclaimer adds oils and sometimes compounding ingredients in making the reclaim. The average loss due to removal of the beads from tires runs about 15 per cent. In times when rubber scrap is high in price, it is economical to strip the rubber from the actual bead wire, but inasmuch as the quality of the rubber compound used in the tire bead is poor, it ordinarily is not worth the recovery cost, and the bead finds its end in the bonfire. The fibre loss of debeaded tires will run 20 to 25 per cent. and that of boots and shoes, hose, etc., from 25 to 30 per cent.

In some grades of reclaim part of the cotton fibre is purposely left in as a filler, chiefly to reduce cost, although occasionally to produce some specially desired effect.

Different grades of scrap produce different types of reclaimed rubber, and of course, variation of the time, temperature, softeners used, etc., also have varying effects on the finished product, so that it is not uncommon for a large reclaimer to carry 50 to 100 different standard grades of reclaimed rubber to meet different customers' specifications, depending on whether the material is to go back into tires or tubes, into footwear, insulated wire, friction tape, etc. Once a standard grade is established it is given a name or number. Its formula is rigidly adhered to and regular laboratory control tests made, so that the purchaser can be assured of a constant, uniform source of raw material.

Relatively Inexpensive

Probably the chief reason reclaimed rubber is used in such large quantities is the fact that it is relatively inexpensive, and also relatively stable in price. Whereas crude rubber has fluctuated in the past ten years between 3c and 26c per pound, whole tire reclaim has fluctuated between the comparatively narrow limits of 4c to 8c. Reclaimed rubber is sold largely on rubber content, and inasmuch as a whole tire reclaim runs approximately 50 per cent. rubber hydrocarbon it takes approximately two pounds of the reclaim to replace one pound of crude rubber. The non-rubber constituent of the reclaimed rubber also has its advantages, however, consisting, as it does, of carbon black, zinc oxide, etc., which impart some of their valuable properties to the finished rubber product.

From a processing standpoint, rubber manufacturers often prefer to use reclaim regardless of price. Mixing costs are much lower since formulae containing reclaim mix much faster and with less power. Extruded goods, such as hose, insulated wire, tubing, etc., are more easily held to their gauge during the extruding operation, and also hold their shape better during subsequent vulcanization when reclaimed rubber is present in the formula. Also, the footwear manufacturer finds he has less shrinkage, and embossed patterns hold their embossing better when reclaim is used. These properties imparted by reclaimed rubber are due chiefly to the fact that it is less sensitive to heat than crude rubber.

Has Certain Advantages

In rubber cements reclaimed rubber often shows an advantage over crude due to the fact that a lower viscosity can be produced with a given amount of solvent. In waterproofing cloth, for instance, one coating of a cement containing reclaim may be as thick as three or four coats of a cement made of crude rubber alone. Savings are thus effected due to lower solvent cost and quicker drying time as well as other processing advantages. Adhesives made of reclaimed rubber-resin combinations cannot be duplicated with crude rubber.

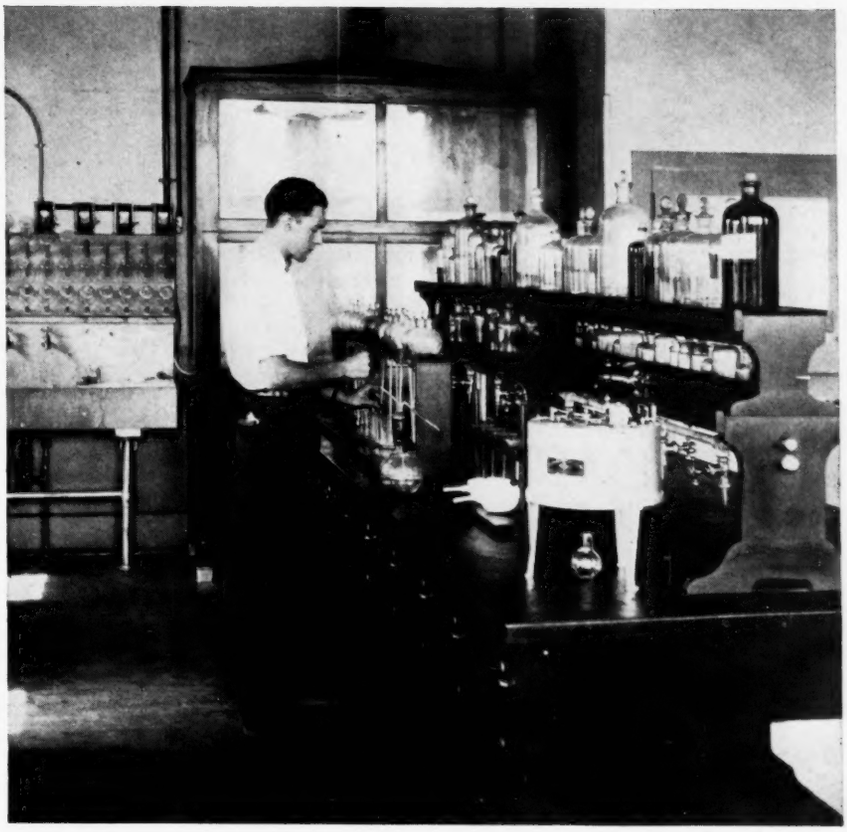


Figure 6. Section of Pequanoc Rubber Company laboratory where small scale rubber manufacturing processes may be carried out and where products so made can be tested. Larger reclaiming companies maintain both physical and chemical laboratories. Staffs devote a large part of time to work on customers' problems involving use of reclaimed rubber.

A practical demonstration of the value placed on reclaim by the rubber technologist is the fact that in 1932 when crude rubber sold as low as 3c per pound, reclaimed rubber sold for 4 to 6c per pound.

Inasmuch as reclaimed rubber does behave differently from crude rubber in many ways, it is essential for the reclaimer to be able not only to formulate new standards for different purposes, but to know enough about the rubber manufacturer's problems to suggest how to use reclaims in his process or to develop compounds using reclaim for new products as they arise. For this reason the larger reclaiming companies maintain both physical and chemical laboratories where small scale rubber manufacturing processes may be carried out and where the products so made may be tested.

Figure six shows a section of the laboratories of Pequanoc Rubber Company. The staff of the laboratory devote a large part of their time to work on customers' problems involving the use of reclaimed rubber.

Keep Waste In Mind

For an industry built up entirely around a waste product, it is natural that this industry's own waste is continually kept in mind. There are two main items which remain as problems. First: Although the finest long staple cotton is used in tire manufacturing, this cotton is destroyed in the reclaiming process. Much money has been spent on methods of recovering the fibre, and a certain amount is commercially reclaimed chiefly by mechanical methods. It has not been found economical, however, to produce a 100 per cent. separation of cotton and rubber, although this problem must be solved eventually.

Tire Beads Are Problem

Disposal of the tire beads is another waste problem remaining to be solved. Expense is involved in carting away the material, and the fire nuisance involved in burning 10-20 tons of this material a day is considerable. As mentioned above, the rubber in these beads can be reclaimed, but the quality of the reclaim produced is poor and the cost high. When scrap iron is high in price, some of the bead wire is recovered after burning and is baled and sold as scrap iron. A sizable quantity of good steel wire still goes to waste, however.

Thus this enormous industry, as old as the rubber industry itself, created to utilize waste rubber, which it converts into a value of some twenty to thirty million dollars a year, is still definitely convinced that continued research will produce not only better reclaimed rubber but further yield of valuable products from present waste.

The Pulse of Opinion—

War in Europe, Probable Loss of Export Markets, and the Counter-balancing Industrial Impetus of Our National Defense Program, Are Factors Bound to Affect the Future of Strategic Chemicals and Raw Materials. Chemical Industries Presents Round Robin Opinions of Executives Well Qualified to Speak With Authority on These Products.

Camphor

GEORGE T. BARNHILL, JR.,
Organic Chemicals Department
E. I. du Pont de Nemours & Co.

The present domestic production capacity of synthetic camphor is approximately 80 per cent. of the country's normal requirements. It would require about three months' time to increase domestic production in order to supply the country's entire needs if the importation of camphor is stopped completely.

Camphor is used largely in the manufacture of nitrocellulose plastics. In recent years new plastics have replaced nitrocellulose to some extent. If a serious shortage of camphor developed, undoubtedly nitrocellulose plastic would be further replaced by the use of other plastics.

Some increase in domestic production may be expected through improved operating technique. Otherwise there seems no justification for further plant expansion since some camphor is still being imported.

The outlook for export sales is not at all encouraging. England is practically self-contained, Germany will presumably supply the Continent and Japan will try to maintain a world market. There probably will be some market for U. S. camphor in the other countries of the Western Hemisphere but the tonnage will be negligible.

Carbonate of Potash
Caustic Potash

S. W. JACOBS, *Vice-President*
Niagara Alkali Co.

For the purpose of this Symposium—what can be said of caustic potash also applies to carbonate of potash. The present situation is one of ample capacity for all domestic needs and an adequate supply of domestic raw material (refined muriate of potash) to support that capacity even under a United States rearmament program.

During the past nine months of the European conflict no serious attempt has been made to export in volume although goods over and above normal stocks for domestic use have been shipped abroad and foreign demand has thus been substantially satisfied.

The makers of refined muriate of potash—the raw material from which caustic potash and carbonate of potash are manufactured—have recently increased their operations to prevent any serious shortage and there has been a corresponding tendency on the part of the makers of these two items to also expand their capacities—and for the same reason.

American consumers of both items are in a safer position today than ever before and can place their reliance on an industry that is all-American—from raw material to finished product and on a policy of "Serve America First."

Cod Liver Oil

CHAS. L. HUISKING, *President*
Chas. L. Huisking & Co., Inc.

When Germany invaded Norway in the early days of April we realized that we were in for a serious time on this important product because the timing of the invasion could not have been worse for us. Norway's 1940 production, that is—the heavy one at the Lofoten Islands, was about completed but the oil had not yet been processed and packed for shipment, so that the entire production of this past winter and spring was really on hand in Norway and a month later would have seen a good portion of it on its way to this side.

Stocks here are always allowed to run down to a minimum in the spring months in anticipation of new oil becoming obtainable and this year was no exception other than the natural disposition in the troubled situation of the world to keep larger than normal stocks on hand. Therefore, the full effect of what has occurred in Norway will probably not be felt here for another year if relief is not obtained in the meantime, and this, of course, can only come through peace in Europe and the resumption of shipments from Norway. This is anybody's guess, and notwithstanding the fact that offers have been made from Norway for shipment when and if possible, these have the effect of doing nothing more than creating false hopes because no steamers can get away from Norway under existing conditions; and even if the Germans were willing to allow oil to leave there, British Naval Control would probably not allow the goods to come through.

I do not look on the situation as being a permanently precarious one, and if now, when there is no natural interest in cod liver oil anyway, people would forget about it, the chances are that by the end of the summer we would see with a little more clarity just what we are facing. In my opinion the stocks on hand, which have been supplemented by some rather heavy shipments from Iceland, may eke themselves out over the winter season, at a not too unreasonable price, taking into consideration the substitute products that are available and will be used if cod liver oil itself has to command too high a price at retail.

We see no hope of increased production in our waters, as even on the present basis it is uneconomical. There have been quite substantial inquiries in the market for export because all other countries are shut off from Norway, but the disposition here has been to conserve available stocks for home use.

Dyestuffs (Natural)

H. R. TISDALE, *Manager*
American Dyewood Company

The materials which are of importance at the present time, which are extracted from woods or bark, are as follows: Logwood, Hematine, Fustic, Hypernic, Osage Orange and Quercitron Bark. All except the latter two have to be imported into this country from South or Central America, or the West Indies.

The domestic supply of Quercitron Bark and Osage Orange is fully ample to take care of the ordinary needs, and might be greatly increased if demand warranted.

As far as known, there is no shortage of a supply of the primary raw materials. It is simply a question of transporting raw materials from the primary market to the United States.

There is no domestic source of supply of natural dyewoods other than that of Osage Orange and Quercitron Bark.

Plant production has been rather steady for a period of years, but production could be increased, perhaps tenfold, if demand required.

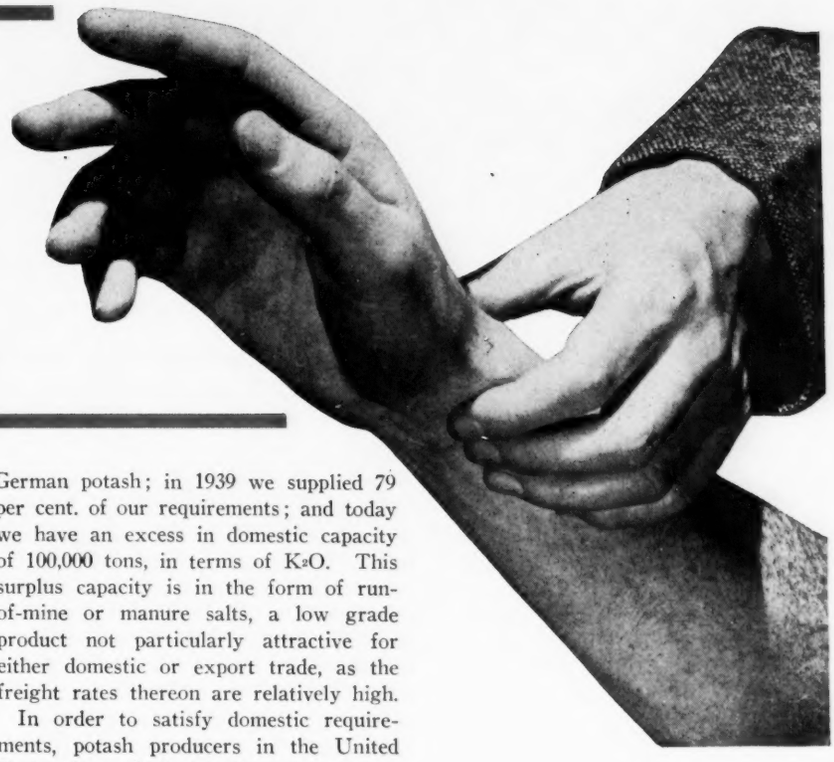
The export demand for natural dyewoods would probably increase, provided there is a shortage of synthetic aniline dyes in any one particular country.

Glycerine

N. N. DALTON, *Consultant to*
Association of American
Soap and Glycerine Producers, Inc.

Production of glycerine is taking care of present consumption. Substitutes or synthetic materials are potentially available, but not needed at present and probably will not be needed. The trend of production has been definitely upward in the past few years. Production of glyc-

Outlook in Strategic Chemicals



erine is likely to increase through increased soap consumption or better glycerine yields, or both. There is little likelihood of any major increase in the export demand in the immediate future.

Naval Stores

J. E. LOCKWOOD
Naval Stores Consultant

Our supplies of rosin and turpentine, the principal products, are excessively large, being respectively triple and double our normal stocks. They appear more than ample for all probable needs. Domestic production of naval stores during 1940 will undoubtedly exceed the demand for consumption and exports. The surplus will increase present excessive carryover stocks. And competitive substitutes and synthetic materials will probably be available and used in increasing quantities.

The trend of naval stores production continues greater than demand, due largely to the continued Government loan program, providing gum producers with an unlimited market for all surplus production at artificial price levels.

The export demand, which has materially decreased since Government artificial price levels became effective, will probably show a further decrease of 50 per cent. during 1940-41 season, and be permanently reduced by foreign trend to self-sufficiency and by post war policies affecting world trade.

Potash

H. I. SMITH*
Chief, Mining Division,
U. S. Geological Survey

America has now an ample supply of potash for industry and agriculture from domestic sources. In California, one producer is utilizing the Searles Lake brines. In New Mexico, two mines are operating on deposits of sylvite (KCl) and a third mine, developing deposits of sylvite and of langbenite ($2MgSO_4$, K_2SO_4, $4H_2O$), is scheduled to enter the fall trade. Some potash is also produced in Maryland and Utah.

At the beginning of the last World War we depended almost entirely on German potash; in 1939 we supplied 79 per cent. of our requirements; and today we have an excess in domestic capacity of 100,000 tons, in terms of K_2O. This surplus capacity is in the form of run-of-mine or manure salts, a low grade product not particularly attractive for either domestic or export trade, as the freight rates thereon are relatively high.

In order to satisfy domestic requirements, potash producers in the United States have limited their export sales, and little potash is available from any source to supply foreign markets outside existing war zones.

*Published by permission of the Director, U. S. Geological Survey.

Quinine

R. H. de GREEFF, *President*
R. W. Greeff & Co.

Normally about half the U. S. requirements are produced here from imported bark and the balance is imported as quinine salts from the Netherlands.

Assurances have been received from the Netherland Indies that ample reserves of Cinchona Bark and Quinine are available and that the Bandoeng factory is able to meet normal requirements of the U. S. of quinine.

Department of Commerce statistics for the last nine months indicate that importations of Quinine received here have been considerably above normal. A survey of large consumers here showed that such firms had stocks on hand sufficient for a year or longer.

Normally there are some re-exports of quinine from the U. S., mainly in the form of tablets and small packages, principally to Central and South American countries. While there has been some increase in demand from these countries, I believe their requirements can be supplied from Java direct, as was done during the previous World War, during which no shortage of quinine developed, and when the price was about the same as now.

Sulfonated Oils

C. P. GULICK
Chairman of the Board
National Oil Products Company.

Speaking broadly, as to the availability of sulfonated oil supplies, I believe our domestic sources are and will continue to be ample for legitimate needs. The industry is presently in a comfortable inventory position, and the bulk of its raw materials is presently from domestic sources. While it will probably continue so far as possible to make use of world raw materials, certain of the larger factors have been prepared for some time to go on a definitely domestic basis because of long range planning and research into improved processing of available domestic materials to meet industry needs.

Since domestic sources of these raw materials will probably make them available in sufficient quantities, it will probably be unnecessary to resort to substitutes or synthetic materials. Synthetic products are constantly being developed, and this process will continue. At the present time, however, synthetics have found outlet in comparatively few specialties; their application, however, can be materially broadened should shortages make such a program advisable or necessary.

It is quite difficult at this time to indicate trends of production in this field. Since sulfonated oil products, however, are used mainly as raw materials in the processing of other goods, such as textiles, leather, etc., the demand for them will depend largely upon the trends of the primary products in which they are employed.

It would be a reasonable expectation, however, for the production to move upward as the military need for clothing, uniforms, blankets, canvas, leather and leather products increases.

ADVERTISING PAGES REMOVED

In view of the fact that the larger units of the industry have, over the recent past, materially increased plant capacity, there is no probable likelihood of a demand for substantially increased capacity. The major factors of the industry can probably deliver a very substantially increased tonnage by merely stepping up production schedules without the installation of additional facilities.

It is not expected, at the present time, that export demand for this type of product would increase greatly as the principal countries of the world are very largely on a self-supporting basis. A possible exception to this would probably be South American markets. Trend, however, in these markets in recent years has been toward a domestic economy. The sulfonated oil industry would therefore meet with export demand indirectly because the products of this industry would be used domestically to process other goods which would probably come substantially into export demand.

It is still too early to predict the long range picture of this industry. It is probably geared up, however, directly with the entire United States economy. It is impossible for me to become very enthusiastic about any section of United States economy when faced with the competition in world markets of goods made by slave labor in dictator-ruled countries. In my judgment, since no country can be entirely prosperous upon a domestic basis in this shrunken world in which we live today, it will be a serious problem to maintain the accustomed American standard of living and still compete in world markets with coolie or slave labor. In this sense, every citizen of this great country of ours has a definite stake in overcoming the world revolution which is now in progress.

Tartars, Crude

A. A. TEETER, *Treasurer*
Chas. Pfizer & Co., Inc.

Sources are France, Italy, Spain, Algiers, Portugal and Argentine. United States of no consequence. With exports from France and Algiers prohibited as a war measure, and the Mediterranean closed, quantities of raw material available approximate only 20 per cent. of the world's needs. Due to the scarcity and high cost of raw material, prices of finished products have materially increased; Tartaric acid for instance, from 27¾c at the outbreak of the war to 39¾c today. We believe most manufacturers have fair stocks, but naturally stocks are diminishing, with little hope of normal replacement. Many users of tartaric acid are switching to citric acid on account of price stability of the latter. Demand for export will increase, because of inability of Europe to supply, but we see no way of our exporting. The trade here must be, and is always, our first consideration.

Tung Oil

C. C. CONCANNON
Chief, Chemical Division
U. S. Bureau of
Foreign and Domestic Commerce

Tung oil imports have been greatly reduced by conditions existing in China, and the effects of the war in Europe are not likely to cause any further reductions. Imports of tung oil into the United States during 1939 amounted to 78,717,634 pounds valued at $11,724,253, against 107,455,674 pounds valued at $11,923,480 in 1938. In the first four months of 1940 imports of tung oil amounted to 33,585,440 pounds valued at $7,223,138.

Our normal consumption of tung oil is over 125 million pounds, but because of very high prices, has dropped to much lower figures in the last two years. Our industries used only 15 million pounds in the first quarter of 1940, leaving stocks of 47 million pounds at the end of the period.

It will be some years before Gulf coast groves can supply any substantial part of our domestic demand for tung oil. We produced about 2 million pounds of oil from the 1936 tung crop; 3 million pounds in 1939; and perhaps 6 to 8 million pounds may be obtained from the 1940 crop. The capacity of our seven tung mills has been more than sufficient to process the nuts which have thus far been produced in the United States. Additional units will be constructed as required.

Our processing industries are meeting the situation by wider utilization of "substitute" drying oils and synthetic resins in their formulas.

Wax, Japan

G. E. STERNHEIM
H. H. Rosenthal Co., Inc.

The United States is entirely dependent for its supplies of Japan Wax on the source, namely, Japan. In our experience, the present conflict in Europe has had little or no effect upon the prices of Japan Wax for although before the present war, large quantities used to go to almost all European countries, and although this outlet has disappeared for Japan, prices are firmly maintained at about 15c per pound for shipment from source. We have learned that this material is being used to an ever increasing extent in Japan as a substitute for other waxes which formerly were imported from other countries into Japan. For this reason, there are no large surplus stocks available in Japan which could have a depressing effect upon the market.

We expect the present prices to rule as long as no other factors enter into the picture, which might have a serious effect upon supply and demand. We do not believe that the demand in the United States will change to a great extent in the immediate future.

Waxes

H. GORDON MacKELCAN
Vice-President in Charge of Sales
Innis, Speiden & Company

Beeswax can be obtained in good sized quantities in the United States and also from South America. There is a certain quantity of Beeswax imported from Africa but if this material were not obtained we believe that the domestic and South American beeswax would be sufficient for home consumption.

Candelilla wax is a product of Mexico. We do not anticipate difficulties in obtaining this wax. Carnauba wax is a product of Brazil. Unless something unforeseen occurs we should continue to get our supplies from this source.

Paraffine wax is a domestic product and is also obtained from India. However, the domestic production is sufficient to take care of domestic consumption. Montan wax can only be obtained from Germany. Ever since the war started last September it has been impossible to import any quantity of this material.

Ozokerite wax is also a European product. The source of supply in the past was Austria, Poland, and Roumania. There has been none of this material imported from any of these countries since last September, although some quantities have come into this market from Italy. This source of supply is also cut off. We believe that fair substitutes for ozokerite wax have been found although consumers would no doubt go back to using the ozokerite wax if it were again obtainable.

Foreign Literature DIGEST

By T. E. R. Singer

In *Industrie Chimique* 27, 42 (1940), G. V. has a short article on the properties and preparation of Ichthyol, while in the same journal, same issue, 53-54, G. Genin continues his article on milk serums with an article on casein paints and plastics. Once again, in the same journal, same issue, page 55, D. Treves reviews the French agriculture situation as it is affected by the war, while closely related is the article by P. Waguet, of the *Institut Agricole de Beauvais* in *Revue des Produits Chimiques* 43, 105-106 (1940), on the relation of chemical industry to agriculture. This particular article, one of a series, deals with lime. In the same journal, same issue, 101-105, there is a lengthy article by J. F. on the nitroparaffins as starting material in organic synthesis.

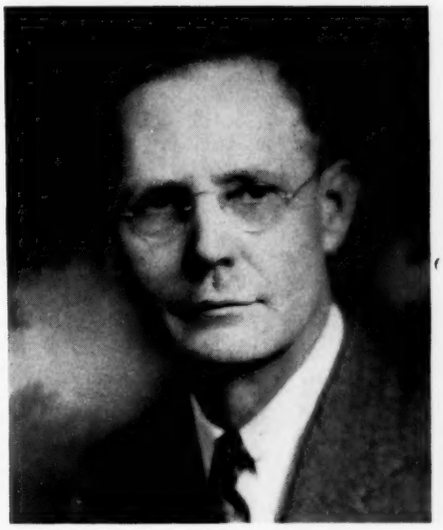
In a later issue of this periodical, pages 121-125, J. H. Frydlender starts an article on the methods of preparation, properties and uses of luminous paints.

"Headliners" In the News

Edward R. Weidlein, director of Mellon Institute, was appointed consultant to Defense Advisory Committee on all matters pertaining to chemistry and the chemical industry.

Dr. Waldo L. Semon, of Goodrich, holds first tire made entirely of "Ameripol" perfected by him. Dr. Semon is also discoverer of "Koroseal." New rubber is manufactured from American materials exclusively.

Harold E. Thompson, vice-president and chief engineer of Carbide has been awarded honorary degree of Doctor of Science by University of West Virginia.



Dr. William M. Barr, chief chemical and metallurgical engineer, Union Pacific Railroad has been elected president of the American Society for Testing Materials.

James H. Critchett, vice-president of Electro Metallurgical Company, vice-president, Carbide Research Laboratories, has been appointed a member of the National Research Council.

R. E. Wilson, president, Pan American Petroleum & Transport Company, was awarded honorary doctor of engineering degree by Brooklyn Polytechnic Institute.

Chemical Leaders Meeting of

Left to right, John R. Klotz, Stanco, Inc., Dr. A. D. Chambers, Du Pont; Kenneth H. Klipstein, manager of development department, Calco; partially hidden, E. T. Asplundh, vice-president, Pittsburgh Plate Glass; W. I. Galliher, director of sales of Columbia Alkali.

In the picture to the left, Warren N. Watson, secretary of the M.C.A., and Lammot Du Pont, re-elected to the presidency of the Association.

Harold B. Prior, president, Prior Chemical.

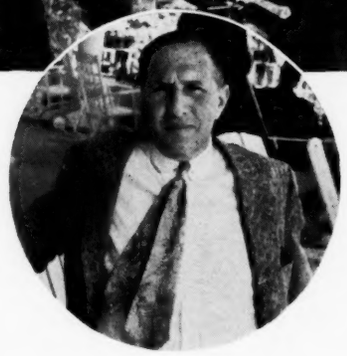
Frank Miller Fargo, Jr., president, Calco Chemical.

Paul Mayfield, director of sales, Naval Stores Division, Hercules Powder, watches a beautiful drive go across the lake at the 10th hole.

George W. Merck, president of Merck & Co., and a vice-president of the M.C.A.

Rollo Wheeler and Hans Stauffer, both of Stauffer Chemical.

John Karr, N. Y. sales manager, Victor Chemical; August Kochs, president, Victor Chemical; H. Gordon MacKelcan, vice-president in charge of sales, Innis, Speiden.



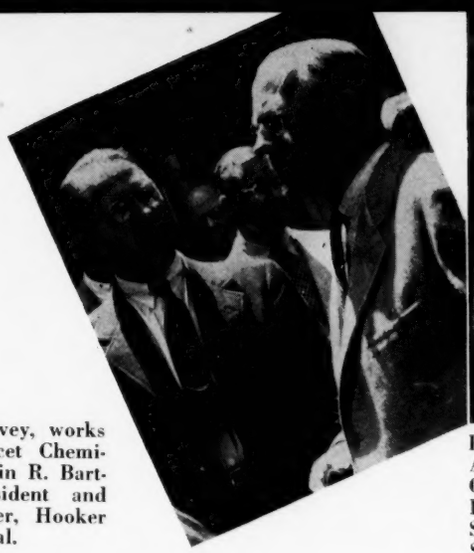
At the right, Stanley Weil, vice-president, Natural Products Refining.

At the left, H. J. Gronemeyer, Du Pont, and chairman of the M.C.A. Tankcar Committee, and T. P. Callahan, well known packaging expert of Monsanto Chemical.

Theodore Marvin, Hercules Powder's advertising manager, and Lloyd Kitchel, general manager of the Virginia Cellulose Department of Hercules.

at the Skytop Lodge

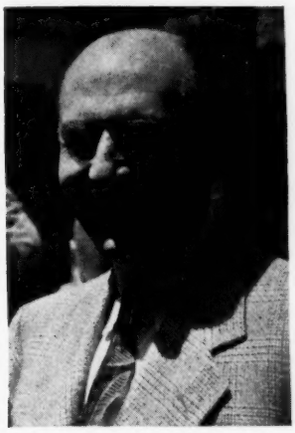
the M. C. A.



Waldo C. Hovey, works manager, Niacet Chemicals, and Edwin R. Bartlett, vice-president and works manager, Hooker Electrochemical.

Philip M. Dinkins, vice-president, American Cyanamid & Chemical; Glenn L. Haskell, vice-president, U. S. Industrial Alcohol; and N. E. Van Stone, director of chemical operations, Sherwin-Williams Co.

George A. Anderson, vice-president, Chas. Pfizer & Co.



H. L. Derby, president, American Cyanamid & Chemical, and chairman of the Association's executive committee.

Harry A. Goman, president, Natural Products Refining.

H. O. C. Ingraham, vice-president, General Chemical.

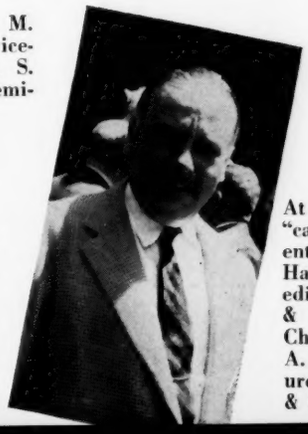
Below, Charles L. Gabriel, manager, market development division, Commercial Solvents, and Douglas Stewart, E. I. du Pont de Nemours & Co., join the "hecklers" at the 10th (water hole) tee.

Left, Fraser M. Moffat, vice-president, U. S. Industrial Chemicals, Inc.

Victor E. Williams, assistant general sales manager, Monsanto Chemical.

Howard R. Huston, assistant to the president of American Cyanamid Co.

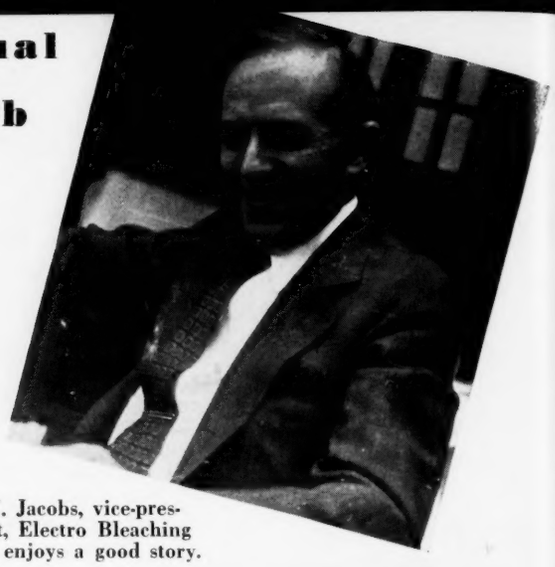
At the right, Louis Neuberg, vice-president, Warner Chemical.



At the right, two "candid camera" enthusiasts — Dr. Harrison E. Howe, editor of Industrial & Engineering Chemistry, and A. A. Teeter, treasurer, Chas. Pfizer & Co.

Chemists' Club (N. Y.) Holds Annual Party at Winged Foot Golf Club

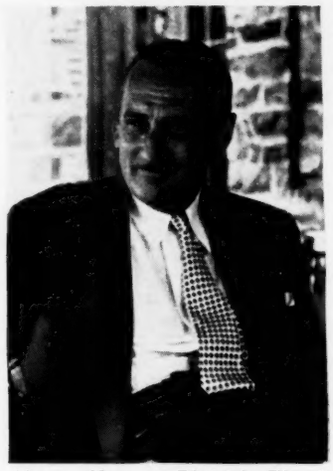
Serious golf. Left to right, George Bode, New York office of R. & H. Chemicals Division of DuPont; "Jim" Ferris, Electro Bleaching Gas; Ira Vandewater, secretary, R. W. Greeff & Co.; M. H. McAlister, vice-president, F. W. Berk & Co., N. Y. City.



S. W. Jacobs, vice-president, Electro Bleaching Gas, enjoys a good story.

Left, John A. Marcuse, vice-president, West Disinfecting, Long Island City.

Curtis F. Berk, vice-president, F. W. Berk & Co.



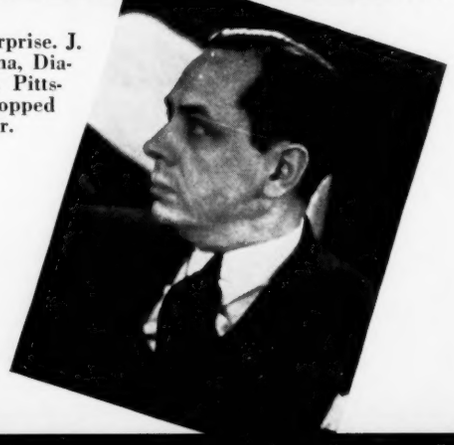
Above, Clarence Weirick, The C. B. Dolge Co., Westport, Conn.

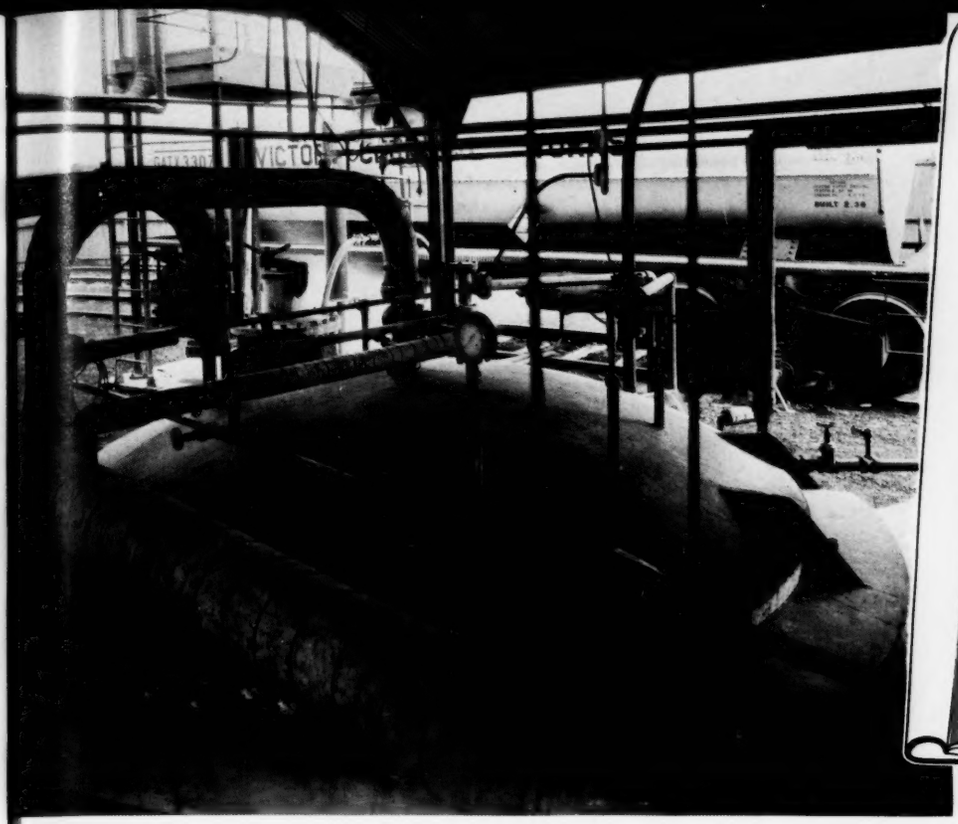
Below: C. A. Funke, Nova Chemical Corp., N. Y. City; Howard Farkas, sales manager, U. S. Stoneware, N. Y. City.

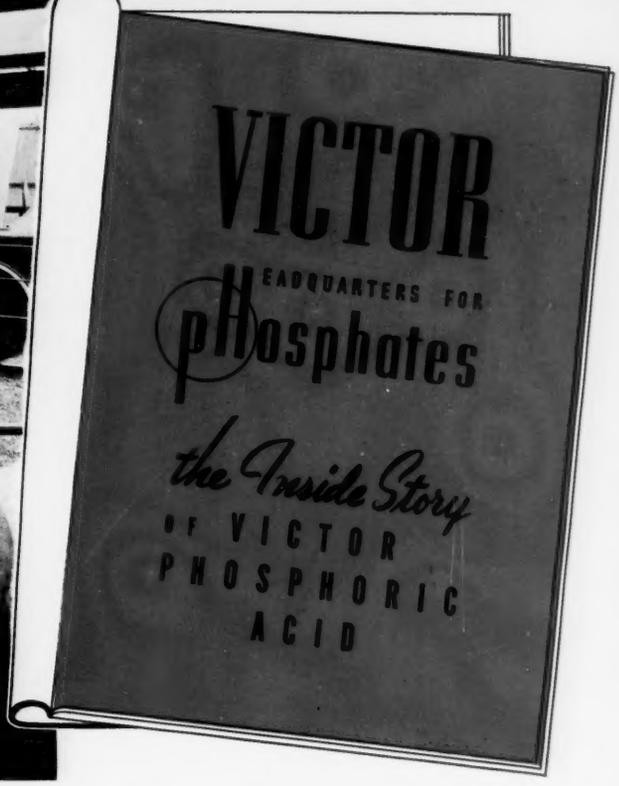
D. W. ("Tommy") Thompson, Mathieson Alkali, and "Bill" Weed, Niagara Alkali, in deep thought deciding who wins the "booby" prize.

More serious golf. "Charlie" Frost, Prior Chemical; "Pete" Reilly, Reilly Tar & Chemical; J. B. Eakins, J. S. & W. R. Eakins, Brooklyn, N. Y.; James F. King, Dosch, King Co., Whippany, N. J.

A pleasant surprise. J. Cline McKenna, Diamond Alkali, Pittsburgh, who dropped by for dinner.







1. Produced by the Victor electric furnace process, pure Victor Phosphorus is stored in submerged safety tanks, each with a capacity of 150,000 lbs. Pumped from these storage tanks by displacement with water, molten phosphorus flows to combustion chambers where it is carefully burned to form P_2O_5 and collected in hydrators as phosphoric acid.

2. Rate of phosphorus flow from storage tank is automatically controlled by the "Rotometer."

3. To assure thorough combustion, temperature is recorded and checked hourly.

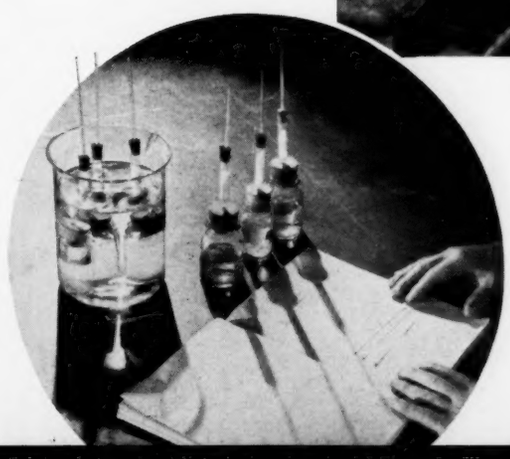
SEND FOR CATALOG OF VICTOR CHEMICALS

Phosphoric Acid
Pyrophosphoric Acid
Polyphosphoric Acid
Metaphosphoric Acid
Phosphorus
Phosphoric Anhydride
Phosphorous Acid
Alkyl Acid Orthophosphate
Ammonium Hexaphosphate Dinitride
Ammonium Phosphates
Alkyl Ammonium Phosphates
Fireproofing Compounds
Calcium Phosphates
Magnesium Phosphates
Potassium Phosphates
Sodium Phosphates
Sodium Pyrophosphates
Potassium Pyrophosphate
Sodium Metaphosphate
Alkyl Acid Pyrophosphates
Formic Acid
Aluminum Formate
Nickel Formate
Sodium Formate
Sodium Boroformate
Oxalic Acid
Calcium Oxalate
Sodium Oxalate
Magnesium Sulphate
Sodium Aluminum Sulphate
Ferrophosphorus
Triple Superphosphate

VICTOR CHEMICAL WORKS

GENERAL OFFICE

3001 Board of Trade Bldg., Chicago, Ill.



4. Air supply to combustion chamber is also checked at regular intervals. (Orsot analysis.)

5. Samples of Victor Phosphoric Acid are checked every minute of the day. In this way only can Victor's exceptional purity be maintained. (Picture shows Gutzeit test for arsenic.)

DIAMOND ALKALI PRODUCTS

...play an important role in all of these primary Industries

ALKALI

BREWERY

76% Caustic Soda
HiTest Alkali
Nos. 1, 2, 3
Industrial Alkali
B. B. Alkali
Alkali Special

BOTTLING

76% Caustic Soda
Industrial Alkali
HiTest Alkali
Nos. 1, 2, 3
Alkali Special
B. B. Alkali

DRY CLEANING

Carbon Tetrachloride
Diamond Dry Cleaner

FOOD PRODUCTS

Bicarbonate of Soda
58% Soda Ash
Cleansers

LEATHER TANNING

58% Soda Ash
Bicarbonate of Soda
Bichromate of Soda
Tanner's Alkali

GLASS

58% Soda Ash, Dense
Potassium Carbonate
Non-Fer-Al Lime
Bichromate of Soda
Silicate of Soda

CHEMICAL

58% Soda Ash
76% Caustic Soda
Liquid Chlorine
Bichromate of Soda
Bichromate of Potash

LAUNDRY

Sodium Orthosilicate
Sodium Metasilicate
Supersilicate
Alkalate
58% Soda Ash
Compound No. 5

HOTEL AND RESTAURANT

Diamond Soda Crystals
Cleaner and Cleanser
Compound No. 3
Compound No. 5
Diamond Detergent

OIL REFINING

76% Caustic Soda
58% Soda Ash
Liquid Chlorine

RAYON

76% Caustic Soda
(Rayon Grade)
58% Soda Ash
Liquid Chlorine

MILLING

Bicarbonate of Soda
(Free-Flowing—Special
for Milling Trade)
Liquid Chlorine

PAPER

58% Soda Ash
76% Caustic Soda
Liquid Chlorine
Calcium Carbonate
Silicate of Soda

SOAP

76% Caustic Soda
58% Soda Ash
Diamond Soda Crystals
Silicate of Soda

DAIRY

58% Soda Ash
Cleaner and Cleanser
Diamond Soda Crystals
76% Caustic Soda
Industrial Alkali

METAL INDUSTRIES

58% Soda Ash
76% Caustic Soda
Sodium Orthosilicate

PAINT

Pigments and Fillers
Bichromate of Soda
76% Caustic Soda
58% Soda Ash

TEXTILE

58% Soda Ash
76% Caustic Soda
Silicate of Soda
Metasilicate of Soda
Bichromate of Soda

MUNICIPAL

58% Soda Ash
76% Caustic Soda
Liquid Chlorine
Ferric Chloride
Silicate of Soda

DIAMOND ALKALI COMPANY

PITTSBURGH, PA. and Everywhere

PLANT OPERATION AND MANAGEMENT

Strong, Tight, Leakproof

Welding may be described as the mainstay of the chemical plant. Oxy-acetylene welding, providing a joint that is tight and leakproof under all operating conditions, has been a boon both from a safety as well as an economical standpoint. This process is discussed in an article beginning on the following page.

A DIGEST OF NEW METHODS AND EQUIPMENT FOR CHEMICAL MAKERS

CHEMICAL INDUSTRIES

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DIAMOND ALKALI COMPANY

PITTSBURGH, PA. *and Everywhere*

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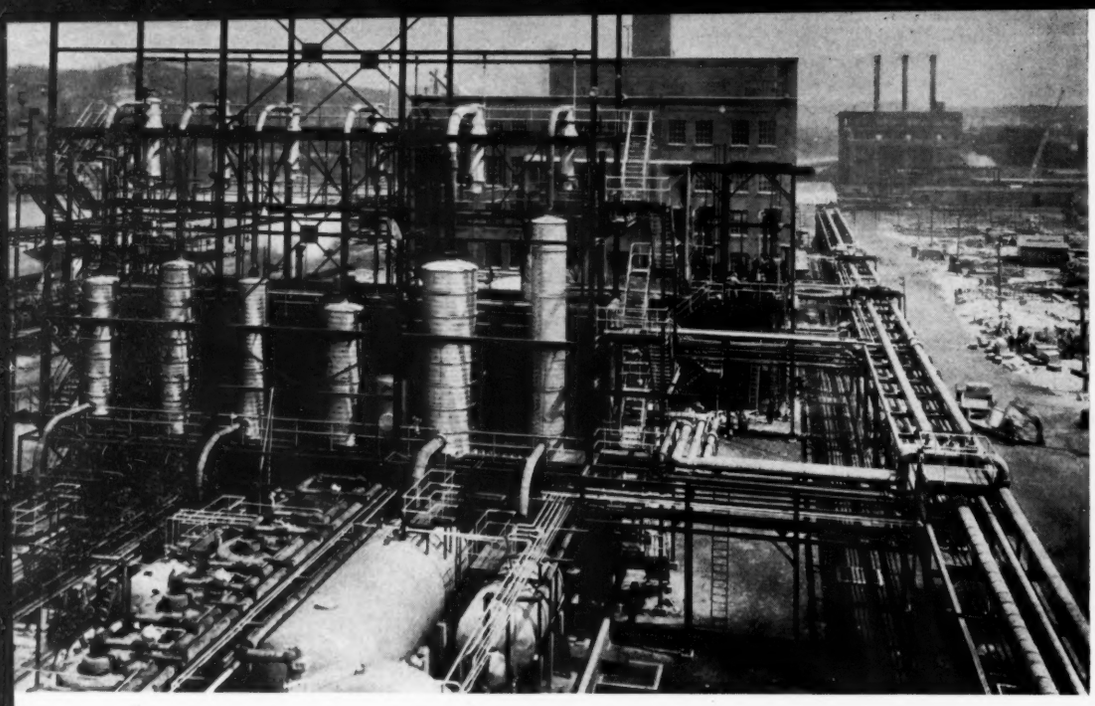
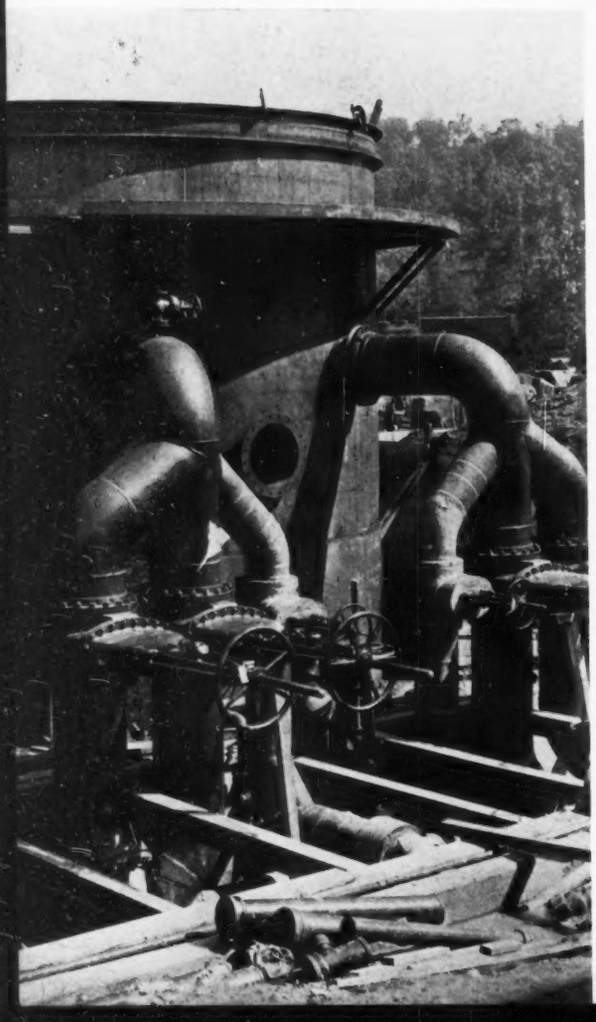


Careful organization of work in construction of process piping of a chemical plant is well repaid in time and money.

MODERN WELDING
Practices in the Chemical Industry

Installation and Relocation of Piping in Chemical Plants Has Always Presented an Efficiency Problem to the Engineer. This Article, Discussing Modern Methods of Oxy-acetylene Welding, Whereby a Smooth Flow of Information and Materials is Maintained, Should Prove of Universal Value.



SOMEONE once described a chemical plant as "a flotilla of tanks and vessels floating in a sea of pipe." Probably no one is more acutely aware of the quantities of piping needed in the modern chemical plant than those individuals who are directly charged with the organizing, from drafting board to finished job, of the design, fabrication, and erection of process piping. Because the general problems involved in this work are common to most chemical companies, whether they be planning the construction of a new plant, or are engaged in enlarging or relocating existing systems, it might prove helpful to review the techniques developed by one large chemical plant whereby a smooth flow of information and materials is maintained at all times.

The organization of the work is built entirely around the use of the oxy-acetylene process. Principal among the many advantages of oxy-acetylene welding is that it provides a joint permanently tight and leakproof under all operating conditions. This is an important factor not only from the standpoint of the loss which leakage of valuable materials involves, but also from the standpoint of safety, particularly where highly corrosive or highly combustible fluids and gases are processed at high temperatures and pressures.

Another advantage of oxy-acetylene welding is that it makes practicable "made-to-measure" fabrication and erection of the piping job. Many of the complex units could not be otherwise constructed. Members are fabricated at the shop in the largest sections that can be handled conveniently, and then fitted together speedily and orderly in the field. In this way, in many types of work, fewer hangers, less scaffolding and rigging are required; less manual effort is required in erection; and construction costs are reduced. Furthermore, insulation is more quickly and inexpensively done; and the stream-lined piping fits into a smaller space.

Still another advantage is flexibility. New branch lines can be connected to existing lines by welding in much less time and at very much less expense than with mechanical joints. Changes in plan can be readily taken care of, even after

By H. D. Lanterman, *Carbide and Carbon*

a job has started. The flexibility of the process is further increased by the capacity of the oxy-acetylene flame for cutting all ferrous metals and for welding all metals, including the newer special alloys developed for the unusual requirements of processing chemicals.

Four Primary Objectives

The whole plan of organization has four primary objectives: (1) to shop-fabricate as many lines as possible; (2) to give the welding operator nothing to do but welding; (3) to give each individual a minimum number of duties, but designate definitely his responsibilities; (4) to consider the entire piping job as divided into a number of lines, each a separate part of a composite whole.

By shop-fabricating as much piping as possible, welding is carried out on a production basis. Lines are fabricated at lower expense and under less supervision than is possible in the field, and the quality of welding is higher. Also, the work of the erection crew is expedited since it does nothing but work on the final assembly.

Giving the key workman in the organization, the welding operator, nothing to do but welding assures both quality and production of welds being uniformly high. By relieving him of other duties, he is able to concentrate fully on his all-important work. Furthermore, it is easier to gauge accurately the time required to complete a certain line.

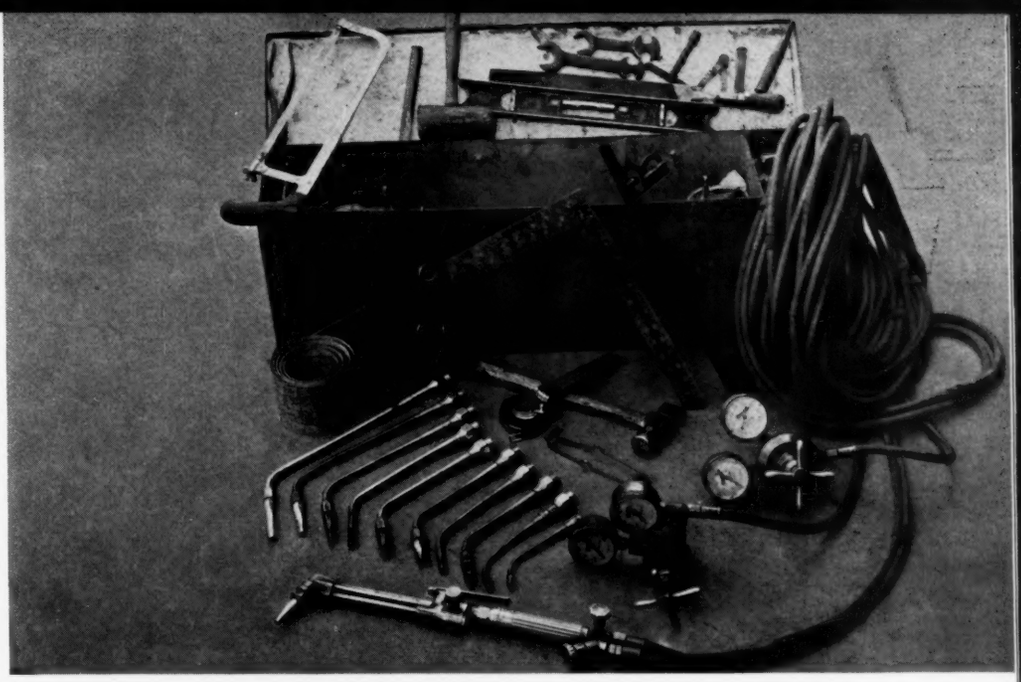
The designation of authority and responsibility is extremely important. The workmen are confined to actual fabrication and erection, while planning is delegated solely to trained engineers. The welding foreman, for instance, is responsible for all welding, whether it be in the shop or during erection.

The fourth factor—considering the entire piping job as divided into a number of unit lines—eliminates a constant source of confusion. Each line is given a definite designation, and all pipe sketches, line bills and work orders refer to this number. Thus, the line is fabricated in easily handled sections in the welding shop and is assembled on the job as a unit.

Flow of Information and Materials

The method used to arrive at these objectives, as well as to organize the flow of information and materials, is as follows:

The Construction Engineering Department executes the general piping-assembly drawings, from which the Billing De-



Equipment supplied to each operator, including welding and cutting blowpipes, regulators, hose, and a variety of tools.

Assembled pipe sections being tied-in in the field.

This photograph illustrates the compactness which is an important feature of oxy-acetylene welded process piping.

Chemicals Corp., South Charleston, W. Va.

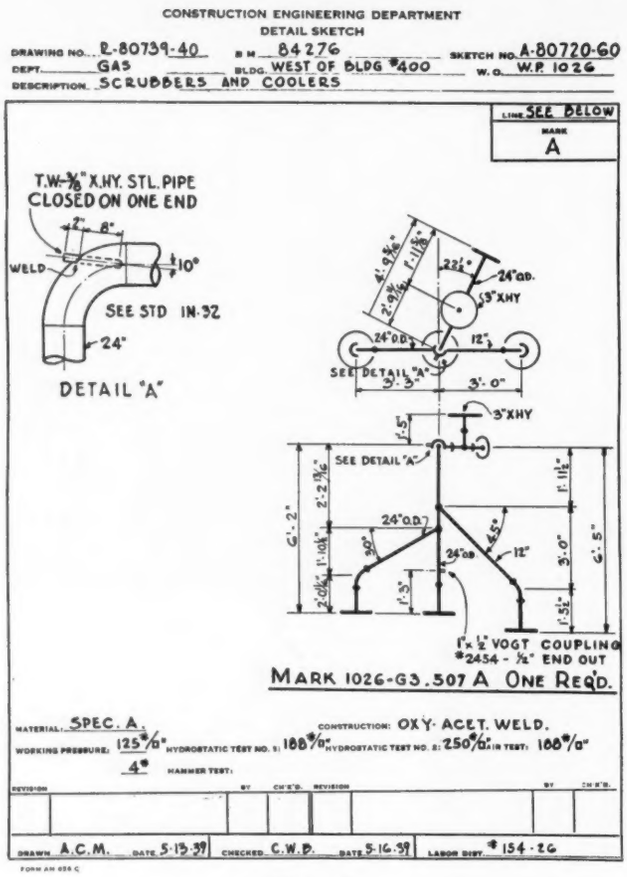


Figure 3.

Review of this sketch will show in detail how system operates. Each line is shown as a unit. Each section of a line is considered a unit of work, requiring the service of a simple welding operator and his helper.

partment makes a materials take-off in the form of stock bills. Stock bills are then sent to the Purchasing Department as authority for purchase. When materials ordered are received they are stocked either in the general stores or in the welding shop stores, depending upon whether or not they are necessary for shop fabrication.

Pipe sketches are prepared by the Construction Engineering Department, and, as mentioned previously, a single sketch is made for each line as a unit. A line bill is also drawn up. A copy of this is sent to the Receiving Department for check-off when materials are received. Each pipe sketch and corresponding line bill are then sent to the welding shop and act as an authorization to start work. The job is ready for fabrication after the welding clerk is notified by the Receiving Department that all necessary materials are in the welding shop stores. After completion, the unit is inspected and tested and sent to the field for erection.

Sketches Show Operation

A review of the pipe sketch and line bill shown in Figs. 3 and 4 will explain in greater detail just how the system operates. It is important to bear in mind that each section of a line is considered a unit of work—a definite job usually requiring the services of a single welding operator and his helper. The job may call for the fabrication of a header, or the tack-welding and welding of nine joints required in erecting a line in the field. Each job is, of course, chargeable to a given line, and no job order concerns more than one line.

Cost Keeping

The duties of the welding clerk are particularly important. One of these duties is to keep a cost record.

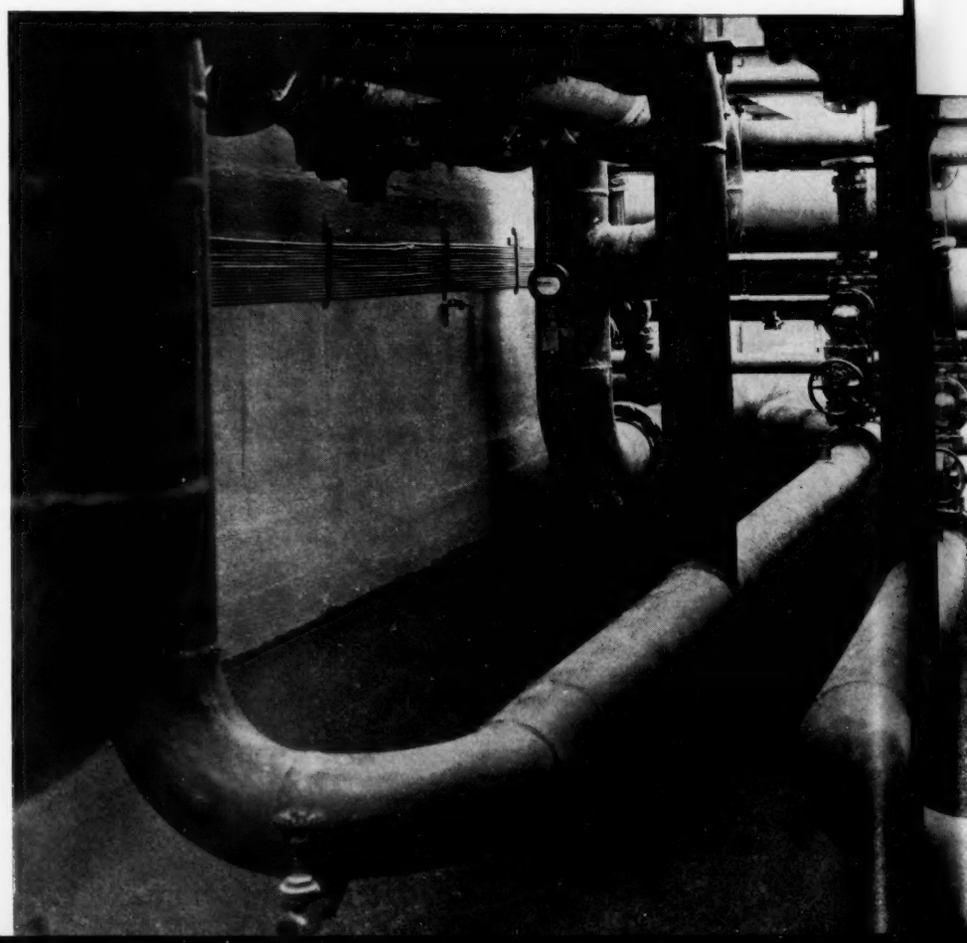
Before a pipe sketch and line bill are given to the welding foreman, they are rubber-stamped on the back with a special form. Information as to the routing of the job is recorded on this form as an estimate of the cost of the line and time required by the operator for its completion. The actual time consumed to complete the line is later noted, together with a record of the tests, and any defects which may be found.

This has two purposes—a check on the ability of the operators, and a record of the man-hours of work scheduled for production. From the daily reports of the welding clerk, the welding foreman knows at all times the exact amount of work ahead in the shop. If work scheduled for a certain date is more than the existing organization can take care of, additional workmen are secured or some of the work is advanced to a later date. The date that a job is scheduled for completion is noted on the line bill. When the material needed for the job has been received, the job is assigned to the "active" file under the date it is wanted. If the material required is still to come, the job is listed in the "pending" file.

Procedure Control

The procedures for insuring satisfactory workmanship follow, in general, the stand-

Much of the piping between processing units is carried in trenches as shown below.



ard procedure control for oxy-acetylene welding. This includes (1) qualification of operators, (2) selection and inspection of materials, (3) design and layout of welded joints, (4) preparation of materials for welding, (5) organization of operators, application of approved welding technique, (6) inspection and tests.

The design of welded joints, preparation of material, and welding technique in this plant are in accordance with standard practice. However, because of the variety of materials necessary for process piping, a word should be said regarding the qualification of operators and selection of materials.

Qualifications of Operators

Hiring and qualifying operators is one of the most important duties of the welding foreman. It is interesting to observe that in this plant many of the operators were formerly engaged in other types of work and were trained to become operators in the welding shop. On an average, ten per cent. of the welding shop crew are training to become qualified operators.

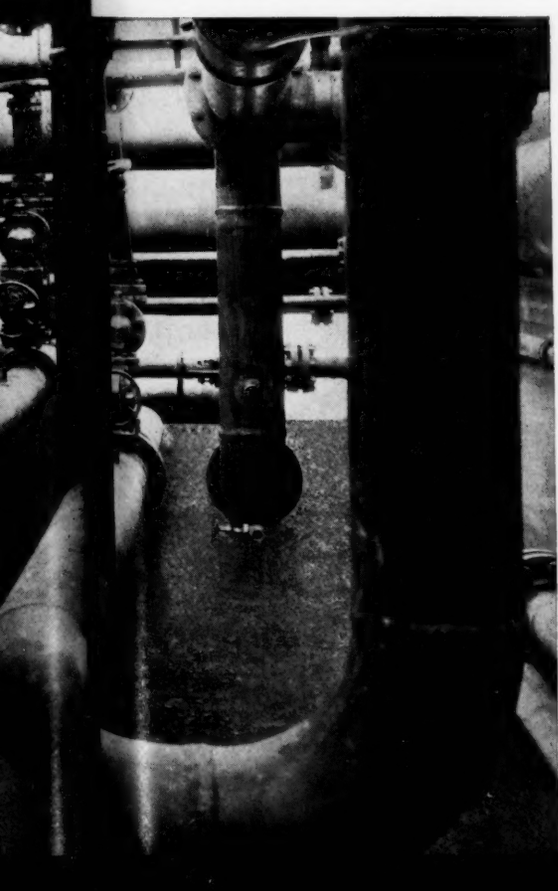
All operators, whether hired or trained in the shop, must qualify in accordance with the A.S.M.E. Code for Unfired Pressure Vessels, Class U-68. As they gain in experience, they are further qualified to weld stainless steel, aluminum, copper, Everdur, and special alloy steels. Fifty per cent. of the operators in this shop are qualified to weld these materials.

Selection of Materials

Although the selection of piping materials and welding rod is usually based on experience, there are many instances where there is no precedent to follow. In these cases, test units are first constructed which duplicate in every detail the final production units. These test units operate on a semi-production basis and the performance of the materials of construction is studied closely. All welds are regularly inspected, and if they show signs of insufficient corrosion resistance, the material or rod or welding technique is varied until the ideal combination has been worked out.

In other instances where the intermediate stage between test unit and final production unit is eliminated, test specimens of welded plate or piping are prepared and subjected to accelerated corrosion tests.

In any case, the length of life which may be expected of the welded piping and equipment is determined as accurately as possible beforehand. This is highly important since many of the processes in this plant are interdependent, and failure of one of the units might mean shutdown for a number of related units.



Fabrication, Inspection and Field Erection

When the welding operator receives the pipe sketch and line bill, he or his helper gets the corresponding box of fittings previously made up by the welding shop stores. Pipe listed on the order is obtained from the pipe yard where it is stocked. The welding operator then proceeds to line up the job, join the various pipe and fittings, and perform any straightening which may be necessary. All welds are stamped with the operator's assigned number.

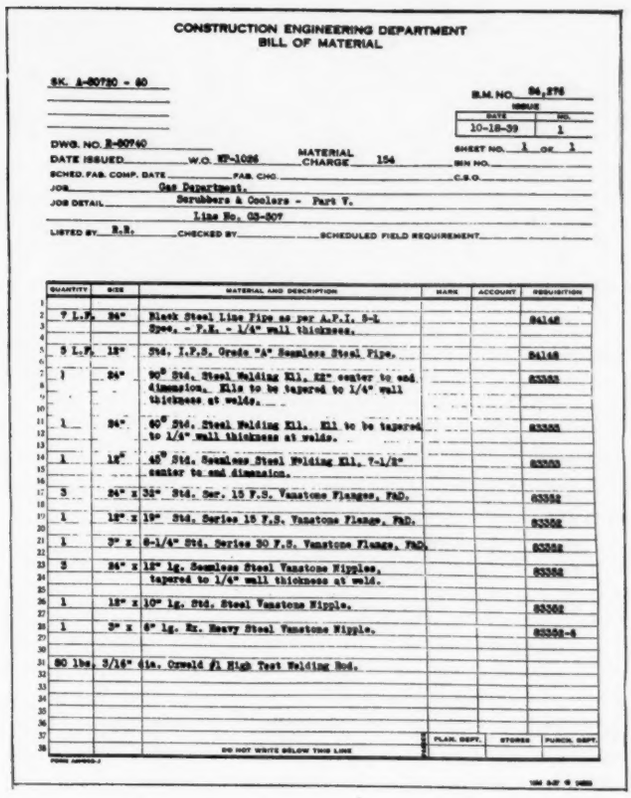
All jobs are checked for mechanical accuracy to a normal tolerance of plus or minus 1/16 inch. The checker makes sure that dimensions are in accordance with the sketch, that bolt holes are in alignment, and that there are no obstructions in the pipe. Completed units usually are subjected to three tests:

1. Hydrostatic test, at 1½ times working pressure, with hammer blows.
2. Hydrostatic test at twice working pressure.
3. Air test at 1½ times working pressure.

All tests are marked on the line with the work order, line number, and section number.

Upon completion, the fabricated unit is sent directly to the erection crew, or else placed in temporary storage. Field erection is performed by pipe fitters under the supervision of a pipe-fitter foreman. However, all welding required in the field, such as tie-in welds, is the responsibility of the welding foreman. The welding operator assigned to the job gets the necessary equipment and supplies with the co-operation of the welding clerk. All field welds are stamped with the operator's number. If the welding foreman thinks it necessary, he accompanies the operator to the job to see that the work is performed satisfactorily. Finally, the completed line is again tested, insulated if necessary, and painted.

Pipe sketches are brought down to billing detail in this chart. Individual stock bills are prepared for each pipe sketch. Cost records are kept by the welding clerk.



CONSTRUCTION ENGINEERING DEPARTMENT
BILL OF MATERIAL

SK. A-80720 - 60

B.M. NO. 84,276

ISSUE	
DATE	NO.
10-18-39	1

DWG. NO. B-80740 — SHEET NO. 1 OF 1

DATE ISSUED ____ W.O. KP-1026 — MATERIAL CHARGE 154 — BIN NO. ____

SCHED. FAB. COMP. DATE ____ FAB. CHG. ____ C.S.O. ____

JOB Gas Department.

JOB DETAIL Scrubbers & Coolers - Part V.
Line No. GS-807

LISTED BY R.B. — CHECKED BY ____ — SCHEDULED FIELD REQUIREMENT ____

	QUANTITY	SIZE	MATERIAL AND DESCRIPTION	MARK	ACCOUNT	REQUISITION
1						
2	7 L.F.	24"	Black Steel Line Pipe as per A.P.I. 5-L Spec. - F.E. - 1/4" wall thickness.			84148
3						
4	5 L.F.	12"	Std. I.P.S. Grade "A" Seamless Steel Pipe.			84148
5						
6	1	24"	90° Std. Steel Welding Ell, 42" center to end dimension. Ells to be tapered to 1/4" wall thickness at welds.			83353
7						
8	1	24"	60° Std. Steel Welding Ell. Ell to be tapered to 1/4" wall thickness at welds.			83353
9						
10	1	12"	45° Std. Seamless Steel Welding Ell, 7-1/2" center to end dimension.			83353
11						
12	3	24" x 30"	Std. Ser. 15 F.S. Vanstone Flanges, FAD.			83352
13						
14	1	12" x 19"	Std. Series 15 F.S. Vanstone Flange, FAD.			83352
15						
16	1	3" x	8-1/4" Std. Series 30 F.S. Vanstone Flange, FAD.			83352
17						
18	2	24" x	12" lg. Seamless Steel Vanstone Nipples, tapered to 1/4" wall thickness at weld.			83352
19						
20	1	12" x	10" lg. Std. Steel Vanstone Nipple.			83352
21						
22	1	3" x	6" lg. Hv. Heavy Steel Vanstone Nipple.			83352-6
23						
24	80 lbs.	3/16" dia.	Oxweld #1 High Test Welding Rod.			
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37				PLAN. DEPT.	STORES	PURCH. DEPT.
38			DO NOT WRITE BELOW THIS LINE			

FORM APPROVED

Figure 4.

NEW
Processes and Products

Para Lube

This new product is an asphaltic flux used as a softening and dispersing agent an activator, and a lubricating agent. As a softener, Para Lube is recommended by its manufacturer in production of molded and extruded goods and in hard rubber products. Its activating properties are such that in many instances the usual amount of fatty acid may be omitted or greatly reduced. Its use as a lubricating agent is said to result in cleaner molding of the stocks so that molds do not have to be cleaned so frequently.

Polyvinyl Alcohols

Polyvinyl alcohols are white to creamy-white powders, odorless and tasteless. Their diversified properties are leading to a wide range of applications in manufacture of coated, grease-proofed, high-wet-strength and specialty papers, adhesives, leather finishes, molded rubber-like articles, tubing, polishes, cosmetics, gloves, and other products.

Objects coated with aqueous solutions of PVA and dried are covered with films which are said to have exceedingly good properties. PVA powders can be molded under heat and pressure to produce rubber-like products in many shapes.

Paint on Plastics

Although one of the major claims of plastics advocates is the elimination of all finishing operations, it has been necessary to use costlier resins and expensive pigments in order to obtain brilliant colors. Working on the theory that color and finish need only apply to the surface, chemists of a large paint company have worked on problem of getting the necessary adhesion and characteristics for successful coatings for plastics. Their success is shown by the recent announcement of a new enamel called "Kem Bakalescent," in the iridescent form and "Kem Plastite," in solid colors. These new finishes make it possible to coat cheap black plastic material with beautiful colors.

Synthetic 190

This new material, a highly polymerized hydrocarbon, is described as being superior to rubber in its resistance to oxidation, aging, and to metals ordinarily injurious to rubber. According to its supplier it has no taste or odor, good electrical properties, simple processing properties and is compatible with rubber. It is said to be especially suitable for white goods where sunchecking and discoloration are problems, as in white side-wall tires and footwear.

Cell-O-Stain

This is a newly developed double action wood-finishing product. It is said to have extreme light fastness and non-grain-raising qualities plus the advantage of a binder. The presence of the binder eliminates the necessity of any wash coats. The product has unusual clarity and stability. Although developed primarily for spraying, it can be applied by dipping or brushing; can be supplied in any color; and is sold ready for use.

Lead Sodium Alloys

Lead-sodium alloys, used in metallurgical work and as drying agents for inflammables, are now being manufactured in commercial quantities. Despite published reports omitting mention of their availability, the compounds have actually been supplied to the trade for some time.

One of the alloys is marketed under the trade name "Hydrone." It is a solid lead-sodium alloy containing approximately 31 per cent sodium in virgin chemical lead.

It is now used to a considerable extent as a master alloy in metallurgical work to harden, modify grain structure, deoxidize and refine non-ferrous metals. A smooth evolution of hydrogen is obtained with no sparking when small lumps of "Hydrone" are immersed in water. The product has therefore found use as a source of hydrogen for analytical work, in field welding and in other applications where a supply of pure hydrogen is required.

Color for Cement Floors

A new floor dye has been developed and is available in six attractive shades. The new material not only colors but has high penetrating qualities and fills all pores. Entirely different from oil paints, it is said that this new dye dries to a flat finish, is void of gloss or glare and stays put indefinitely. It is easy to apply. The floor is first thoroughly cleaned, rinsed with a hydrochloric acid solution, and then the dye is applied with lambs wool applicator or any large brush. After the floor has been dyed it is polished with a self-polishing wax of the same color.

Booklets & Catalogs

Chemicals

A192. About the NP's; leaflet describes in general way characteristics and properties of four basic nitroparaffins, nitromethane, nitroethane, 1-nitropropane, and 2-nitropropane. Commercial Solvents Corp.

A193. Alframine dca; general information and description of properties and uses of this soapless cleaner. Michel Export Co., Inc.

A194. Alkalies and Chlorine in Treatment of Municipal and Industrial Water; This new book presents detailed discussion and analysis of the various techniques that are used in treating water supplies. Contains charts, tables and other data that are valuable to the water engineer. Solvay Sales Corporation.

A195. Ferrisul for Metal Treatment; describes in detail use of Ferrisul (anhydrous ferric sulfate) for etching of steels and for pickling of stainless steels, copper and copper alloys. Monsanto Chemical Co.

A196. Glycerine Facts; June, 1940. Summary of legal position of glycerine under new food, drug and cosmetic act. Also variety of items of general applications of glycerine. Glycerine Producers' Association.

A197. Paint Progress; Vol. 1, No. 3. Contains articles on revision of Federal Standards for casein paints, drying stability, and paint durability on "sour" crude oil tanks. The New Jersey Zinc Co.

A198. Plasticizers and Resins; Prepared for the purpose of setting forth essential characteristics of certain plasticizers and resins. Contains specifications and application data. Monsanto Chemical Co.

A199. R-B-H Dispersions, Technical Section, June, 1940; Glossary of terms commonly used in protective coatings industry. R-B-H Dispersions, Inc.

A200. Sulphur; 45-page treatise on the properties and applications of sulphur. Texas Gulf Sulphur Co.

Equipment—Containers

E283. Air Shutoff Valves; leaflet describing construction and applications of these valves. Homestead Valve Manufacturing Co., Inc.

E284. Dust Tight Capacitors; 10-page bulletin includes hints on capacitor applications, description of the construction features, dimensional data in the form of outline drawings and typical wiring diagrams for installations in different sections of feeder and motor circuits. Westinghouse Electric and Manufacturing Co.

E285. Effect of Water Conditions on Selection of Pump Materials; 4-page leaflet outlines information required to intelligently select proper materials for pumps, also gives chart showing materials recommended for various pH ranges. Allis-Chalmers Mfg. Co.

E286. Irv-O-Lite; bulletin covers nine outstanding features of new extruded tubing, contains samples, specifies colors and lists prices. Irvington Varnish & Insulator Co.

E287. Mechanical Rubber Goods; 24-page catalog containing engineering data and guide to selection of various products. B. F. Goodrich Co.

E288. Neoprene Notebook, No. 25; Manufacture of industrial products from rubber and neoprene. du Pont de Nemours & Co., Inc.

E289. Portable Recording Voltmeters and Ammeters; features that make these recorders moistureproof and rugged enough to withstand transportation and rough use are described. The Bristol Co.

E290. Sealing of Corrugated and Solid Fibre Containers; Complete text book on the subject, generously illustrated. Robert Gair Co., Inc.

E291. Texrope V-Belt Drives; Complete Engineering Section, Catalog 151. Contains complete information on the new horsepower ratings for Texrope Drives, permitting greater accuracy in the selection of drives. Allis-Chalmers Co.

E292. The American Line; 12-page reference catalog of entire line of products. American Foundry Equipment Co.

E293. Thruster Operated Valves; Describes construction and gives specifications for this type of valve which is useful for steam, water, natural or artificial gases, oil, formaldehyde, alcohol, brines, etc. General Electric Co.

E294. Typical Examples of Goodrich Development in Rubber; A reproduction of a series of advertisements on unusual rubber uses containing illustrations and descriptions. B. F. Goodrich Co.

E295. V-Belt Drive Catalog; This catalog shows new belt ratings which permits more precise and economical selection of V-Drives. The Medart Co.

E296. Wheelco Thermocouples, Bulletin No. S2-2; Illustrates and describes complete line of thermocouples, thermocouple wire, lead wire, insulators, protecting tubes, etc. Wheelco Instruments Co.

Industry's Bookshelf

Industrial Plastics, by Herbert R. Simonds; Pitman Publishing Corp., N. Y. City, 370 pp., $4.50. An excellent survey of the industrial plastics industry is but one of the many outstanding features of Mr. Simonds' work. Illustrations, selected with care, contribute not a little to the chapters on molding practice, fabrication, industrial applications and design. This is a "must" for everyone in the plastics industry, and every chemist should have it at hand.

Physik, Fur Studierende an Technischen Hochschulen und Universitaten, by Dr. Paul Wessel, Ernst Reinhardt Verlag, Munchen, Germany, 550 pages. Very complete work on elementary physics. Copiously supplied with illustrations and examples.

Physical Organic Chemistry, by Louis P. Hammett, McGraw-Hill, N. Y. City, 404 pages, $4.00. In this unified and consistent treatment of generalizations and theories hitherto widely scattered among periodicals, Dr. Hammett presents the results of the application of physical chemical methods to the problem of the equilibrium, the rate and mechanism of the reactions of organic chemistry, which is to say to the prediction of the direction and yield of the organic chemist's procedures.

Conversion of Petroleum, by A. N. Sachanen, Reinhold Publishing Corp., N. Y. City, 413 pages, $6.00. This book relates to the fundamental principles and practices of converting petroleum products into gasoline and other fuels. The author discusses thermal and catalytic reactions of hydrocarbons, fundamental factors of cracking, fundamental factors of hydrogenation, cracking equipment, properties and treatment of cracked gasolines, and cracked products other than gasoline.

The Kinetics of Chemical Change, 4th edition, by C. N. Hinshelwood, Oxford University Press, London, Eng., 274 pages, $4.50. Although great strides have been made in the subject matter, this book has been completely rewritten without any increase in size. Clarity has been preferred to compendiousness. General principles are discussed and illustrated by selected examples.

Organic Syntheses, Vol. 20, Charles F. H. Allen, Editor-in-Chief, John Wiley & Sons, Inc., N. Y. City, 113 pages, $1.75. Continuation of a valuable series giving methods for the preparation of organic chemicals. This volume gives methods for thirty-nine compounds.

Insulating Steam Joint QC 79

A new type of insulating steam joint called the "Hose Type" consists of a special seamless rubber tube, compounded to resist steam and heat and covered with plies of strong, closely woven duck. Between these plies are placed layers of insulating rubber. A heavy gauge cover is applied on the outside.

Each joint is 8 in. long and built to stand 100 pounds steam pressure. It is furnished complete with hose clamp on each end for attaching to standard iron pipe. The joints are inexpensive, easily attached and replaced, and fully adequate for all of the normal conditions of acid and other chemical handling equipment.

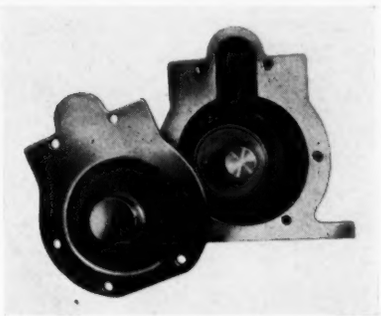
"Hydra" Valves QC 80

A new series of valves, suitable for use in hydraulic presses and machinery, are being marketed under the trade name of "Hydra." They may be used on water, steam and oil lines, having pressures up to 4,000 lbs. per sq. in., and according to the manufacturer, are less expensive to buy, install, operate and maintain.

One of the principal features of Hydra Valves is the ease with which they may be operated. Only one-eighth turn of the operating handle is required to open and close the valve. During this operation, the four stainless steel balls that close the valve are automatically engaged into port holes due to pressure on the line. There are no valve seats to regrind and consequently no need to remove valve from line for repairs. Internal parts are of stainless steel construction.

Versatile New Pump QC 81

Problems of industry are so often interrelated that equipment specifically intended for a certain service in a particular industry can be adapted advantageously to entirely different industries. Such is the case of the pump under discussion. First introduced as a marine pump, it was planned for use in pumping bilge water. It proved itself in this field and because of its advantages in design it is now being used for pumping chemicals, petroleum products and hot liquids.



Simplicity is one of the principal reasons for its success. The pump consists simply of an eccentric rotor turning inside of an impeller which is kept from rotating by a tongue which is held by a groove. Rotation of the eccentric forces the liquid out of one side of the pump by moving the impeller over to that side with a wiping action, and, at the same time, creates a suction on the other side. Either port can be used for discharge.

When the pump was considered by some industries, the rubber impeller became a drawback. That is, the rubber impeller became impractical where temperatures were high or where the liquid to be carried was a petroleum hydrocarbon or a chemical that would attack or swell rubber. These difficulties have been overcome by the development of a tough, wear-resistant and resilient neoprene impeller.

Level Control QC 82

Photoswitch Liquid Level Control renders possible automatic level control of liquids of any electrical resistance without the use of float switches. It is activated by a pair of probes which are placed in the liquid at the level where control is desired.

Chemical Industries

522 Fifth Ave., N. Y. City.

I would like to receive more detailed information on the following equipment: (Kindly check those desired.)

QC 79	QC 81
" 80	" 82

Name .....

Title ..... **Company** .....

Address .....

SOLVENTS

ESTERS, ALCOHOLS, KETONES, AROMATIC SOLVENTS

We welcome the opportunity to furnish further information on properties, prices, and applications of the solvents listed in the following table:

Solvents	Distillation Range—°C.	Pounds per Gallon—60° F.	Flash Point—°F.	Uses
ESTERS				Excellent solvents for nitrocellulose and natural and synthetic resins. They offer the lacquer manufacturer a wide range of evaporation rates for lacquer formulation.
Methyl Acetate	56-59	7.8	10	
Isobutyl Acetate	100-130	7.2	77	
Isobutyl Propionate	115-138	7.1	82	
ALCOHOLS				Effective solvents for oils, waxes, gums, resins and dyes with a wide variety of uses in industry.
Methyl Alcohol	64.5	6.6	54	
Propyl Alcohol	97	6.7	72	
Isobutyl Alcohol	108	6.7	82	
Amyl Alcohol	121-130	6.8	115	
Hexalin	160-163	7.9	154	
Methyl Hexalin	165-190	7.7	155	
KETONES				Used in lacquers, inks, and polishes and have good solvency for cellulose acetate, waxes, gums, vinyl resins and other natural and synthetic resins.
Diisopropyl Ketone	114-125	6.8	75	
Cyclohexanone	152-157	7.9	122	
Methyl Cyclohexanone	160-175	7.6	127	
AROMATIC SOLVENTS				Effective solvents for oils, resins, waxes, rubber and asphalt.
Cyclohexane	81	6.5	10	
Decalin	190-200	7.4	135	
Tetralin	203-220	8.1	172	

HIGH-PRESSURE CHEMICALS SYNTHETIC

DU PONT

E. I. DU PONT DE NEMOURS & CO. (INC.) DU PONT

AMMONIA DEPARTMENT **WILMINGTON, DELAWARE**

NEW CHEMICALS FOR INDUSTRY

A plant which may prove most valuable to our national self-sufficiency is that of American Cyanamid and Chemical Corporation at Warners, New Jersey. Here is made Acrylonitrile, intermediate which adds valuable properties to synthetic rubber.

Digest of Chemical Developments in Converting and Processing Fields

CHEMICAL INDUSTRIES

CYANAMID'S ACRYLONITRILE

Synthetic Rubber Intermediate

Extensive, Indeed, Has Been the Publicity Attending Each New Advance in the Field of Synthetic Rubber. Overlooked, however, is the Chemical Aspect of This Development, Which May, One Day, Make Us Independent of Foreign Crude Rubber Sources. Acrylonitrile, First Discussed Here, We are Sure, Adds a Page to the Chemical History of Our Country.

IF rubber imports were shut off, could synthetic rubber supply the country's needs? Is the United States approaching self-sufficiency in this invaluable material? In the light of changing world conditions synthetic rubber-like materials, which up to the present time have found use only because of some particularly satisfactory properties for specialized applications, take on vastly increased importance. Recent research developments make possible an affirmative answer to these questions.

Particularly timely is Cyanamid's announcement that the commercial production of acrylonitrile of a high degree of purity is already under way. Acrylonitrile, which has never before been offered commercially in this country, is an essential intermediate in the production of some of the newer types of synthetic rubbers, especially those highly oil-resistant ones which, for several reasons, appear to have exceptional potentialities for replacing natural rubber if the need should arise. This development assures an adequate domestic supply of this chemical in commercial quantities, and opens up new fields for the synthetic rubbers. The future of acrylonitrile is so promising that Cyanamid is already making plans to double production capacity in order to anticipate the demand.

Stability of Acrylonitrile

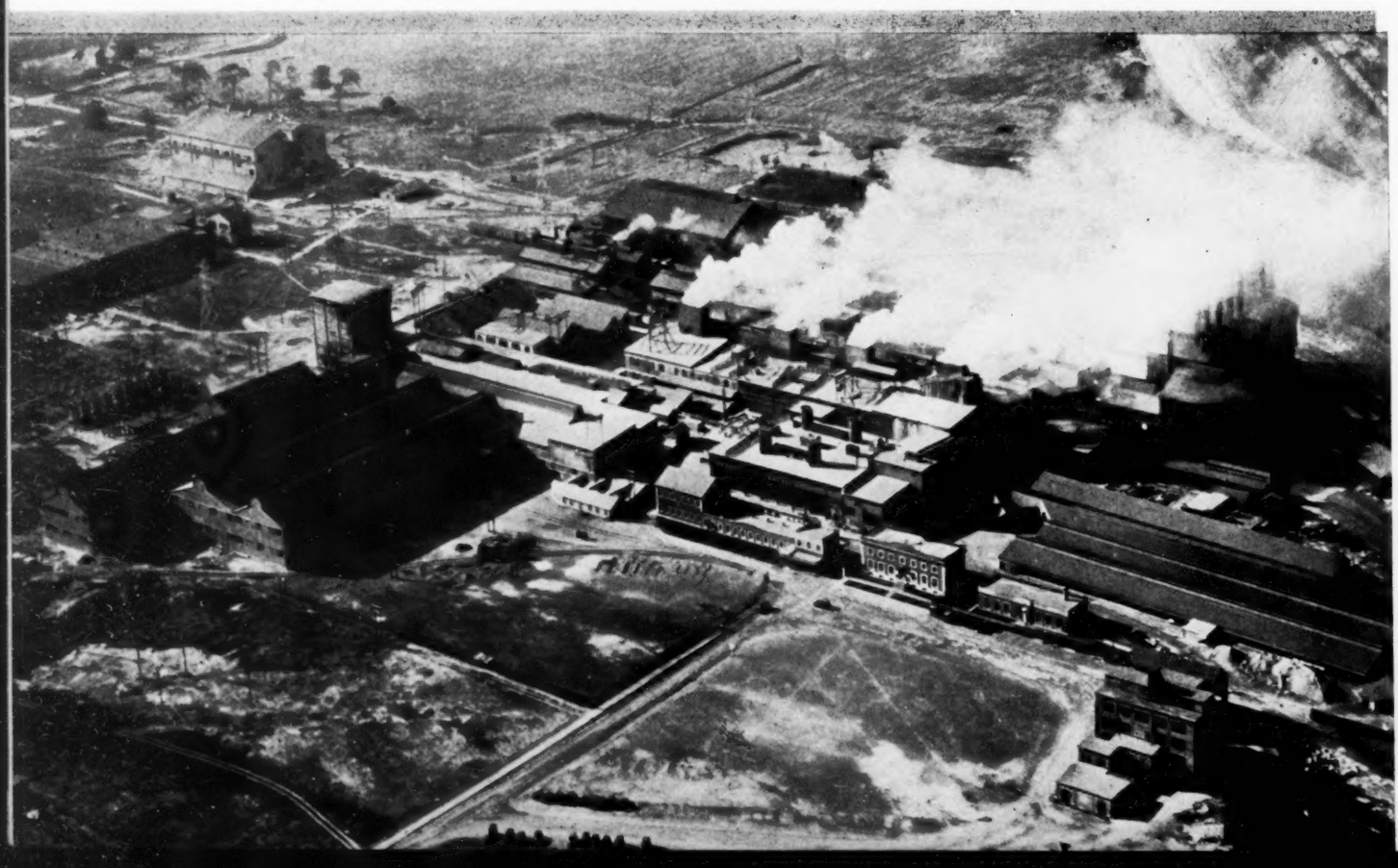
AERO Brand Acrylonitrile is a colorless liquid with a mild odor, boiling at 77° C. (760 mm.). The research studies connected with its production have cleared up some misconceptions about its properties. It is stable on long storage, noncorrosive, and can be safely shipped in steel drums without decomposition or premature polymerization. These rather unexpected properties are undoubtedly the result of its extremely high degree of purity, which is essential in the production of synthetic rubbers. Even traces of impurities may have a harmful effect on the copolymerization of acrylonitrile with butadiene. A trace of copper or of certain amines inhibits the reaction completely. Other impurities accelerate it so much that it cannot be handled.

Cyanamid's success in achieving this purity has been remarkable. The results obtained by applying all available analytical methods to a single sample actually show more variation than the results obtained on different plant samples.

Present Status of Synthetic Rubbers

It is estimated that the total production of synthetic rubbers in this country last year was only about one-third of one per cent. of the crude rubber imports. The reason for this relatively low production is not hard to find. The synthetic rubbers are considerably more expensive than the natural product, and their applications have necessarily been confined to cases in which their superiority justifies the use of a costlier material. Indirectly, their value to industry has been greater

The primary product in the manufacture of Acrylonitrile (calcium cyanamide) is produced in Cyanamid's plant pictured below.



than their limited consumption indicates, for they have exerted a stabilizing influence on the price of natural rubber, which has, on occasion, undergone some amazing fluctuations. The availability of the synthetic rubbers has served to create a ceiling for natural rubber prices.

Possibilities for Development

When the possibility of a shortage of crude rubber is considered, the synthetic rubber industry immediately takes on a radically different aspect. If rubber imports were suddenly shut off or sharply curtailed, cost would cease to be the limiting factor that it is today. The whole field of synthetic rubbers is being examined in a new light, and attention is shifting from present uses to future potentialities.

In considering the synthetic rubbers from this viewpoint, several questions arise. Are the necessary raw materials available in adequate quantities? Can relatively satisfactory and rapid production processes be worked out? And finally, is there a market *now* that will justify plant construction? If such a market exists, production can be initiated to meet the needs of that market, and simultaneously the search can be started for ways of effecting manufacturing economies, which will broaden the field of usefulness by lowering production costs, and permit further plant expansion to meet a sudden demand.

The Role of Acrylonitrile

The existence of an adequate domestic source of acrylonitrile has a vital bearing on these questions. Acrylonitrile occupies a unique position among the materials needed for the copolymer type of synthetic rubber. As a result of having two unsaturated linkages it has the properties of self-polymerization and copolymerization with butadiene. Thus the reaction between acrylonitrile and butadiene makes possible a commercial process for the production of synthetic rubber. Butadiene may be prepared from petroleum, and there appears to be no great obstacle in the way of producing this material in ample quantities. With these two materials in substantial commercial production, a supply of this type of synthetic rubber is assured.

Resistance to Oil

The synthetic rubbers derived from acrylonitrile possess an exceptional degree of resistance to attack by oil, grease, gasoline and certain organic solvents. This property places the acrylonitrile rubbers in a very favorable position. Their immediate applications are those in which natural rubber cannot be used because of its poor oil resistance, and for these purposes the higher cost of the synthetic

By

B. W. Henderson

American Cyanamid & Chemical Corporation

rubber is no drawback. Large quantities are expected to be used for the manufacture of gasoline and oil hose, conveyor belts, packings and gaskets, machine mounting blocks, and protective clothing. As production gets under way, decreasing costs will undoubtedly permit the acrylo rubbers to enter larger markets where their stability under heat and light and their resistance to wear and abrasion are important, for example, in automobile tires.

A Research Achievement

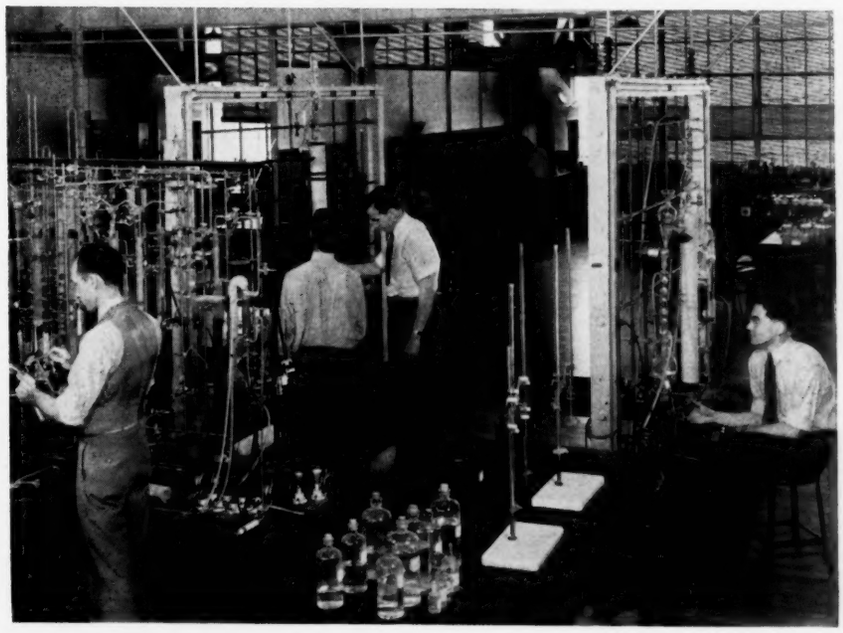
Cyanamid's success in producing acrylonitrile of high purity is a direct result of a carefully planned research program in which the company's accumulation of experience in the field of nitrogen chemistry was of inestimable value. The development of acrylonitrile was a natural outgrowth of research work on calcium cyanamide and the limitless number of products that can be made from it. Work begun as long as twenty-five years ago is now being carried on intensively in the recently coordinated and expanded laboratories at Stamford, Conn. A considerable number of products resulting from this research have been placed on the market and are now in extensive commercial use.

Product Was Virtually Unknown

Acrylonitrile was until recently a virtually unknown chemical. In fact, as the research program continued, much of what was regarded as knowledge of acrylonitrile was found to be highly inaccurate. There was not even a satisfactory method of analysis, and a method had to be developed as a preliminary to successful control of laboratory operations.

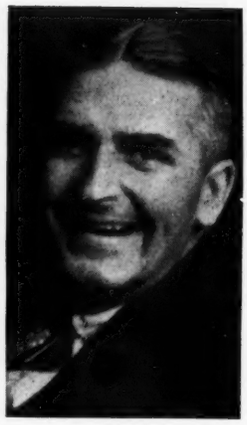
Acrylonitrile is still so new as a commercially available material that it is probable that many applications have not yet been discovered. The high degree of reactivity which makes it so valuable as an intermediate for synthetic rubber production will undoubtedly open up many other lines of chemical synthesis. It will almost certainly find uses in other industrial fields.

Bays at Cyanamid's Stamford Research Laboratories in which research on Acrylonitrile was conducted and is being conducted at present.



Shipping and Container FORUM

By R. W. Lahey



I. C. C. ISSUES ORDER REVISING REGULATIONS FOR TRANSPORTATION OF EXPLOSIVES, DANGEROUS ARTICLES.

On June 12th the I.C.C. issued a special order making the following changes in the Regulations for the Transportation of Explosives and Other Dangerous Articles effective immediately:

1. *Dynamite containing 10% or less liquid explosive*: At present such dynamite is included in the 30% or less liquid ingredient classification and when packed in cartridges or bags no more than 75 pounds gross can be shipped in wooden boxes and no more than 65 pounds gross can be shipped in fibre board boxes. This exception to the existing Regulations *authorizes* the shipment of 140 *pounds gross in specification wooden boxes* provided the dynamite contains no more than 10% liquid ingredient and is packed in the aforementioned cartridges or bags.

2. *Ethene Oxide*, an inflammable liquid, has only been authorized for shipment in I.C.C. 5A returnable drums of 30 gallons maximum capacity cylinders, and certain glass, earthenware and tin inside containers of 1 pound capacity. *It can now be shipped in I.C.C. 104A tank cars* provided there is sufficient outage to prevent the tank from becoming entirely filled with liquid at 105° F.

3. *Acid Sludge, spent sulfuric acid or spent mixed acid.* In addition to the existing regulations for the transportation of these materials in I.C.C. 103A and 103 tank cars, *shipment is now authorized in I.C.C. 1A boxed carboys* provided the liquid contains no hydrofluoric acid.

Returnable Drums Approved

4. *Aniline Oil*: This class B poison liquid has been authorized for shipment in returnable drums I.C.C. 5, 5A, and 5B. The special order of the I.C.C. *authorizes the use of the single trip 5J drum of 55 gallons capacity.* This drum is fabricated of 16 gauge steel, expanded hoops, welded body seam and double seamed heads.

5. *Arsenical compounds and mixtures.* Regulations for the shipment of these class B poison solids have included such containers as specification wooden barrels, kegs, and steel drums as well as specification burlap and cotton paper lined bags for mixtures containing 8% or less arsenic trioxide.

This order authorizes the shipment of any material in this group in inside paper bags I.C.C. specification 2D packed not over 50 pounds net in outside multiwall paper bags I.C.C. specification 44B.

So called *bulk packing is authorized for carload or truckload shipments only of not over 50 pounds net weight in the same I.C.C. 44B bags without inside containers.*

Container Specification 44B requires 4 ply kraft bags of not less than 200 pounds basis weight. The inner ply must be not less than 40 pound basis weight and the outer ply of highly sized, hard finish, waterproof kraft of not less than 60 pounds basis weight. Bags are to be of satchel bottom construction with kraft paper patch and all adhesives are to be of the moisture resistant type.

The top closure is specified in detail requiring special folding, pasting, and the use of reinforcing gummed tape. Other equally effective closures are also authorized. Bags are required to stand 4 foot drops one on each end and one each on opposite sides without sifting or rupture.

6. *Matches*: Authorization for shipment in I.C.C. 24C corrugated fiber containers has been extended to the *use of 3 piece double faced corrugated fiberboard* as specified for 1 piece boxes except that B-flute corrugations are permitted. Construction and closing of boxes must be as specified in I.C.C. specification 23D except that recessed ends are not permitted.

Merck & Co., Inc., is now introducing the Merck "Amberlite" bottle as a container for prescription chemicals. While one-third lighter than the bottle it will replace, the new container is substantially stronger, the company reports. Eventually the "Amberlite" bottle will be supplied in 20 sizes.

Hydrofluoric Acid Manual

The Technical Committees of the M. C. A. following their regular practice, have published a new hydrofluoric acid manual covering in detail recommended safe practices in the emptying and general handling of containers. This pamphlet includes detailed instructions covering rubber drums, steel drums lined and unlined, lead carboys, wooden barrels, and cylinders for the anhydrous acid.

Detailed instructions for the protection of workmen include safety clothing and equipment and suggested emptying devices.

The committees have also standardized on caution labels to be applied to each container in addition to the regular I.C.C. corrosive label required by law. Sample labels to be attached to rubber drums and separate labels for use on metal drums are printed in the Manual.

The M.C.A. is to be highly commended for this contribution to safety.

New Explosives Regulations

Proof No. 4 of the proposed general revision of I.C.C. regulations for the Transportation of Explosives and Other Dangerous Articles has recently been issued. Copies can be obtained from the I.C.C. in Washington.

The existing Rail Regulations were issued in October 1930 and have since been amended by approximately 19 supplements. In addition, regulations for the transportation by motor vehicle as issued in 1935 have recently been superseded by the Commission's Order, effective June 15, 1940, which has now been amended, indicating that those regulations made effective by the Order of June 15, 1940 will apply to carriers only and reinstating the regulations made effective in 1935 as apply to shippers in the preparation of explosives and other dangerous articles for transportation by motor truck carrier. The water regulations have been amended and will be included in Proof 4 and supplement docket.

This Revision represents the fourth proof which has been issued and includes suggestions and requests from the Bureau of Service and Bureau of Motor Carriers of the I.C.C. from the Bureau of Marine Inspection and Navigation of the Department of Commerce, and from shippers. All requirements applying to shippers by rail, water, motor vehicle, and express service have been summarized therein.

A much enlarged and more detailed index has been included which will prove very helpful for shippers.

CHEMICAL SPECIALTIES

Vix-ene for waterproofing leather is being stressed as an aid to comfort for golfers who can't wait until the dew leaves the fairways before teeing off. Everett & Barron Co., Providence, the manufacturer, also suggests it for leather coats, gloves, heavy duty work shoes, and other articles of apparel which are exposed to weather. Package is lithographed Phoenix Cone Top Can.

INDUSTRIAL · HOUSEHOLD · AGRICULTURAL

CHEMICAL INDUSTRIES

★

Specialty products illustrating this article were purchased in variety chain stores by feminine members of our staff. Selections were made on the strict basis of package preference.

★

PACKAGING SPECIALTIES

For Variety Chain Stores

By Charles J. Cunneen, *Ass't Editor, Chemical Industries*

Packaging Your Products For Those Miniature Department Stores Which Have Mushroomed From the Five and Tens, Is Rapidly Approaching an Art. In This Article You Will Read Digested Opinions of Experts On The Subject.

VARIETY store selling is largely sight selling. In this, it differs materially from grocery, hardware, paint, and, to a lesser degree, drug store distribution. The latter chains have for the past several years adopted the variety store merchandising plan of open counter mass display.

There would seem to be no need for a definition of variety stores. However, lest the term be misunderstood, it refers to chains which began as 5 & 10 cent stores but today are miniature department stores carrying merchandise ranging in price from 5 cents to one dollar.

The life blood of these chains is volume. Salesgirls are too busy to sell. In fact the term "salesgirl" is really a misnomer in these outlets. Rather these girls could be described as "wrappers and change makers." Thus, once your product gets into the variety chain it is strictly on its own.

This places an enormous burden on the package in which your product reaches the variety store counter. It will stand side by side with competitive products. It makes its bid for attention when "Mrs. Shopper" comes down the aisle. She may have come into the store for nail polish, but a good floor wax package may serve as a reminder that her husband has been threatening or promising to wax the kitchen linoleum for a month.

Sales made in just this way—impulse buying—accounts for more than 50 per cent. of variety chain sales. The merchandising watchword is: "Get the goods out where people can see it and let it sell itself." But remember, the salesgirl, merchandise man, and the store manager are not even slightly concerned as to whether it is your product or your competitor's product which makes the sale. Only the buyer may show some concern next time your salesman calls on him.

Because your package in these stores is also your display card, visibility must be one of the cardinal virtues of the container. It *must* have eye appeal.

Martin Ullman, president of the Society of Designers for Industry, in discussing variety store packages at the "5 & 10 Packaging Round Table" pointed out the following facts about open display merchandising.

"Price is fixed and the syndicate store provides the same benefits for the small manufacturer, as the larger.

"Packages are seen at close eye range and a selling message boiled down to its essentials can be read conveniently in addition to the trade name.

"A single package of a brand is never displayed, but groups of packages are collectively shown.

"Syndicate store packages are subject to a great deal of handling, people do a lot of 'picking up,' in other words 'near sighted' buying."

It is his belief that the majority of packages now displayed in such outlets might be made to yield from 25 to 50 per cent. more in actual returns if they were redesigned as variety store packages.

There are four progressive steps from the weakest package to the strongest, Mr. Ullman explains.

"The first illustrates the institutional stage, which uses the element of association. The subject is there but small. If you are spending millions of dollars advertising to get your billions of sales, you might be able to afford the institutional method which just 'keeps the name before the public.' However, there is too much aping of institutional designing in syndicate store packages which has created buying ruts.

"The second is educational. We get a little closer to the subject. We get definition of face, clothes and association but there is a great deal of atmosphere.

"The third is factual. We get a closer

view of the subject and very little of the atmosphere goes with it.

"The last is promotional and we have a close-up of the subject. The interest of the great masses of people is the subject of the package, the product and not its artistic package design.

"It is the product, not its label or brand name or color scheme of card or carton, plus the method in which it is strongly relieved from the background that makes people look at it. The more the product is made the focal point of attention the greater will be the number of people who will buy."

Beware of the package which is a label rather than a sales promoter if you would sell in this type of outlet, says Mr. Ullman. And do not hesitate to change designs frequently when such changes will aid saleability. Packages clinging too long to one design can become tiresome to consumers—even attractive packages. For consumers are buying often in these small sizes, and packages can cause an impulsive switch in highly competitive products when the purchaser is at the counter.

In another contribution to the forum, Harry Herman, Toilet Goods Buyer, for H. L. Green & Company, after touching on fundamental principles of packaging, i.e., appropriateness to product, mass display potentialities, and protection and wearability, accented modernization.

Stores Being Modernized

He pointed to the fact that syndicate stores are modernizing exteriors, interiors, lighting fixtures, displays, and doing everything possible to induce the public to shop in syndicate stores by making them just as bright and clean as modern department stores.

Because of this effort, buyers of merchandise for these chains expect manufacturers to tie in with the program by modernizing their packages. It is also important that manufacturers get away from the too much used "chain store package." Modern colors, art, and design can go a long way toward making the product seem worth twice its value.

As to the standard requisites of a variety chain package, Mr. Herman outlined the average merchandise buyers' appraisal of a package offer by a manufacturer in this manner:

"How does a package appeal to the Buyer from the customer's viewpoint? Does it attract? Is the color predominant? Is the color sufficiently predominating to strike the eye? Is it blinding to the eye? Or is it just nothing at all? Does the wording of the package convey in simple form everything that is necessary to sell the article to the customer? Does the wording tell at a glance its use—or is the item a blind one which means that it must be handled by the customer, explained by the salesgirl, etc.

Package Attractiveness

"Now let me amplify a little about how a package attracts the eye. The word 'attraction,' as we see it, means a feminine appeal. It is a feminine word. When a package is attractive it means that in passing by thousands of items on the counter that is the one the woman customer is going to see and pick from the counter—and not just pass it by.

"Is the item packed appropriately? By that I mean, is the item in the correct type package? You would not have a wrench wrapped in cellophane, nor would you put jewelry in a tin box. In other words, do the article and package synchronize?

"Is the package of that type that will fit on a Syndicate Store Counter in conformance with the space that would be allotted to that same class of merchandise? Does the package permit of good mass display stacking without concealing the item, as against the Department Store method of displaying only one package on the counter?

"Does the package protect the contents? For instance—Is it protected as much as possible against human hazards such as tampering and pilfering? Is it protected against atmospheric conditions such as humidity and cold, and physical hazards such as dust, scuffing, earmarking, etc?

Shrinkage Is Terrific

"Those are very important features, because shrinkage in the chain stores is terrific, not only due to pilfering but also due to the fact that the package wasn't wrapped sufficiently well to protect it from those particular hazards that I mentioned."

Another factor not to be overlooked in chemical specialty packaging is utility. Questions to be asked in regard to household containers are: Does it fit comfortably in the hand? Is it easy to pick up—easy to open—with contents easily accessible? Does the package smear or soil after first use? These considerations, however, chiefly concern repeat sales.

Summed up, major elements of the ideal sales package for the high volume variety chain market can be condensed as follows:

1. Visibility.
2. Modern, attractive design.
3. A pithy, fast-registering description of the product by word or illustration, or a combination of both.

ADVERTISING PAGES REMOVED

CHEMICAL SPECIALTY *News!*

N.A.I.D.M. Seeks Change in Labeling Regulations—Price-Fixing Answer Ready—New Products Are Announced—News of Companies

LABELING regulations, effective Sept. 1, requiring that pyrethrum powder and products packages shown percentage of pyrethrins present, were declared unworkable at 26th Midsummer annual meeting of N.A.I.D.M., held at Wawasee, Ind. A resolution was adopted asking that President W. J. Zick appoint a committee to confer with Food & Drug Administration officials on the possibility of setting a standard covering a minimum pyrethrin content in lieu of the proposed regulations.

Revised specifications for CS70-38 and CS71-38 were offered by Dr. E. G. Klarmann. They were accepted with minor changes, and will now be submitted to the National Bureau of Standards, for promulgation to the industry.

Governors Get Proposal

Board of Governors took under advisement a proposal for a booklet to be distributed by manufacturers, acquainting consumers with household insecticides and their correct uses. Booklets would cost $4,500 in lots of 100,000.

Dr. A. E. Badertscher, chairman of the Scientific Committee reported that research work had begun at Ohio State University to develop a standard test for insecticides against crawling insects. He also reported on mothproofing investigations, and recommended that a sub-committee be appointed to review literature and methods of text now in use on cattle sprays for repellancy and toxicity.

Answer on Price Fixing

An answer will shortly be filed with the Federal Trade Commission by the Agricultural Insecticide and Fungicide Association and other companies charged with conspiring to fix prices of "chemicals, insecticides, and fungicides." The announcement was made by a representative of the Chipman Chemical Company, Bound Brook, N. J.

The F. T. C. alleges that the association and 31 companies entered into an agreement in 1936 to restrain competition in sale of their products by maintaining uniform prices, terms, and discounts. The association was charged in the complaint with acting as a clearing house for price information.

Chipman spokesman declared that question under scrutiny was one of the "method of functioning of an industrial association," adding that the practice of openly fixing prices by an association membership has been upheld in other cases.

Vita Flor Introduced

Vita Flor, horticultural vitamin product, will shortly be introduced by National Oil Products Company, President Charles P. Gulick told 575 employees during special ceremonies at the New York World's Fair. The company group visited the Fair as a unit, making the trip in 15 streamlined buses.

Following this announcement, induction of members into the "15-Year-Club" a company group made up of old employees took place. The entire afternoon was spent viewing several special shows at interesting exhibits.

Sherco Products Corp., Syracuse, recently introduced Garbex, made from a formula of non-poisonous chemicals designed especially to deodorize and disinfect garbage. When used in accordance with directions, product also acts as a repellent for ants, flies and roaches.

Masked Lubricant No. 177

Borne Scrysmer Co. is now marketing Masked Lubricant No. 177 for lubrication of ball and roller bearings on machinery operating at temperatures from 0°-1500° F. At room temperature it has a buttery consistency, which is maintained under temperatures at which most grease lubricants dissolve into a liquid, the company states. It has proved highly successful in lubrication of dryers in the textile industry.

New Floor Finish

A new all-purpose floor finish has been developed by Chemical Associates, Brooklyn. Product is said, by the company, to be self polishing, slip proof, and waterproof. It resists boiling water as well as repeated washing with soap and can be applied to all surfaces, according to its sponsors.

Solventol Sales Soar

Solventol Chemical Products, Inc., Detroit, reports sales for first five months of '40 are 30 per cent. better than any similar period in the company's history. Company will shortly begin advertising campaign on Solventol All-Purpose Household Cleaner, according to C. A. Campbell, president.

Perfex Open House

Perfex Company, Tacoma, recently held open house at its plant recently for officials and salesmen of wholesalers to introduce Mild-Ex, new household bleach and disinfectant manufactured by the company.

Advertising Men Convene

Advertising & Sales Promotion Managers of the paint and varnish industry will hold their second annual convention June 12, at headquarters of N. P. V. & L. association, Washington.

Durable Paint Incorporates

Durable Paint Manufacturing Co., Raritan, N. J., has filed papers of incorporation. Arthur L. Robinson, 30 Maiden Lane, Bound Brook, is agent.

N. Y. Textile Section

E. H. Schmidt, chief chemist, Borne Scrymser, was elected treasurer, N. Y. Section, American Association of Textile Chemists and Colorists. Mr. Schmidt, a Cooper Union graduate, is also a member of N. Y. City Chemists' Club, A. I. Ch. E., A. C. S., S. C. I., and Fellow of A. I. C.

Naugatuck Chemical has started construction of new completely automatic power plant which will permit 50 per cent. expansion of production.

Chemical Salesmen Golf at Green Meadow

At the left, T. A. Haschke and E. Demmon, both of Stauffer Chemical.

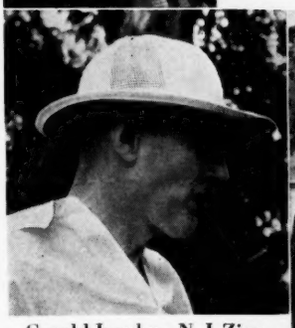
M. D. Resnick, president, N. Y. Laboratory Supply Co.; R. L. Hutchins, Commercial Solvents; L. Shropshire, Bell Telephone "Labs."; and "Jim" MacInnis, Commercial Solvents.

J. F. Henry, Joseph Turner & Co.

At the left, Walter Buehler, The Barrett Co.

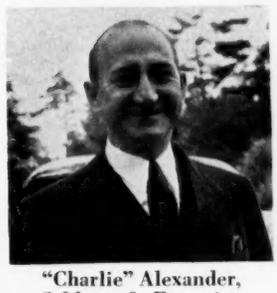
At the right, R. A. Clark, J. T. Baker Chemical Co.

Below, "Joe" Wafer and "Tony" Cirino, both of Industrial Chemical Sales Division, West Virginia Pulp & Paper.



Gerald Jacubus, N. J. Zinc.

Above to the right, "Phil" LoBue, Joseph Turner & Co., and chairman of the entertainment committee of the Association. Directly to the right, H. S. Cottrell, Innis, Speiden & Co.



"Charlie" Alexander, Seldner & Enequist.

"Sid" Klein, Calco Chemical Division of Cyanamid.

Edw. S. Burke and "Joe" Hollywood.

Right, Henry Hermann, General Dyestuff.

At the left, "Shorty" Wyatt, Westvaco, looks over the scores. Below, E. A. Sigworth and "Jack" Butler, both of Industrial Chemical Sales Division, West Virginia

Below, left to right, A. Weiner, Standard Naphthalene, Herman Bercow, H. H. Rosenthal Co., and Harry Smith, George Chemical Co.

N. Y. Section, A. C. S. Holds Annual Outing at Beacon, N. Y.

Members of the N. Y. Section at their annual outing got quite a thrill out of the ride up and down Mt. Beacon.

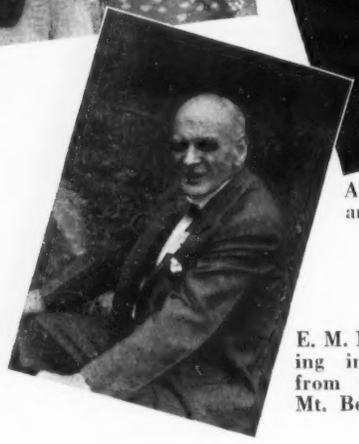
Dr. Albert B. Newman, C. C. N. Y., and Mrs. Foster D. Snell. Mrs. Snell is secretary of the N. Y. Section.

Below, Mr. and Mrs. E. Schmidt. He is chief chemist of Borne, Scrymser.

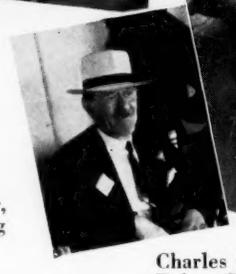
H. Bennett, of the Chemical Publishing Corp., N. Y. City.

Above, John A. Killian and Foster Dee Snell.

Above is the S. L. Tyler family thoroughly enjoying the boat trip up the Hudson. "Steve" Tyler is secretary of the A.I.Ch.E.



E. M. Marshall taking in the view from the top of Mt. Beacon.

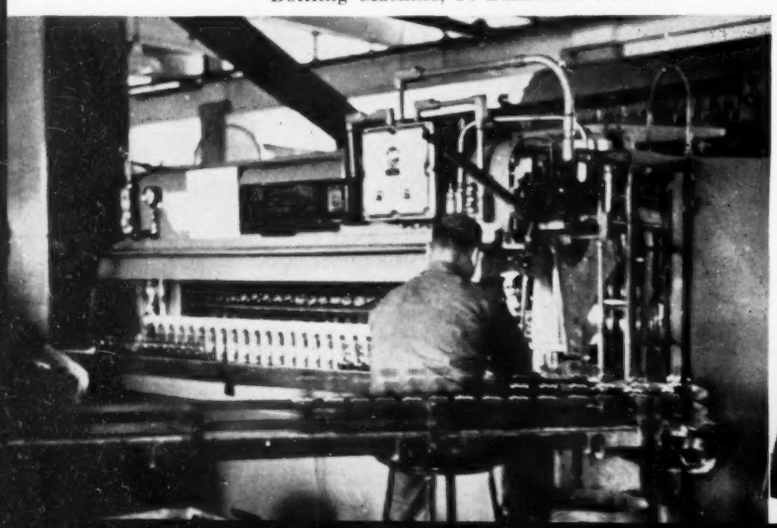


D. D. Berolzheimer, N. Y. consulting chemist.

Charles Slater, J. T. Baker Chemical.

North Jersey A. C. S. Section Inspects Ballantine's Brewery

Bottling Machine, P. Ballantine and Sons



Dr. Randolph T. Major, Research Director, Merck & Co., who succeeds Dr. Robert J. Moore, Bakelite, as chairman of the North Jersey Section of the A. C. S. Below, George Scythes, Chief Chemist, P. Ballantine and Sons; and A. W. Fedderson, Assistant Brewer.

SHARPLES PRIMARY AMINES

	ETHYL ○ AMINE †	n-PROPYL AMINE *	ISOBUTYL AMINE *	n-BUTYL AMINE †	sec-MONO-AMYLAMINE *	AMYLAMINE (mixed isomers) †	sec-MONO-HEXYLAMINE *
COLOR AND FORM	COLORLESS LIQUID OR GAS	COLORLESS LIQUID	COLORLESS LIQUID	COLORLESS LIQUID	COLORLESS LIQUID	COLORLESS LIQUID	COLORLESS LIQUID
AMINE CONTENT	97–99%	95–99%	95–99%	93–96%	95–99%	90–95%	95–99%
MOLECULAR WEIGHT	45.1	59.1	73.1	73.1	87.1	87.1	101.1
SPECIFIC GRAVITY @ 20°	$0.689^{\frac{15}{15}}$	0.718	0.731	0.750	0.739	0.770	0.746
WEIGHT PER GALLON, LBS.	5.70	5.99	6.10	6.25	6.15	6.41	6.22
DISTILLATION RANGE °C	15–18	46–51	66–69	73–86	89–92	84–110	107–110
FLASH POINT °F	BELOW 20	BELOW 20	BELOW 20	BELOW 40	20	65	55
REFRACTIVE INDEX @ 20°		1.3910	1.3985	1.4044	1.4047	1.4166	
SOLUBILITY IN WATER	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE
SOLUBILITY IN ALCOHOL	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE
SOLUBILITY IN PARAFFIN HYDROCARBONS	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE

†COMMERCIAL PRODUCTS *SEMI-COMMERCIAL PRODUCTS

Monoethylamine is marketed as a 70% aqueous solution.

○The above data is for the anhydrous material, which can be furnished if required.

Sharples primary amines are used in the manufacture of pharmaceuticals, dyestuffs, emulsifying and desizing agents, petroleum chemicals and rubber chemicals. ***Send for Sharples Catalog of Synthetic Organic Chemicals describing more than 125 compounds.***

SHARPLES TRADE MARK SOLVENTS

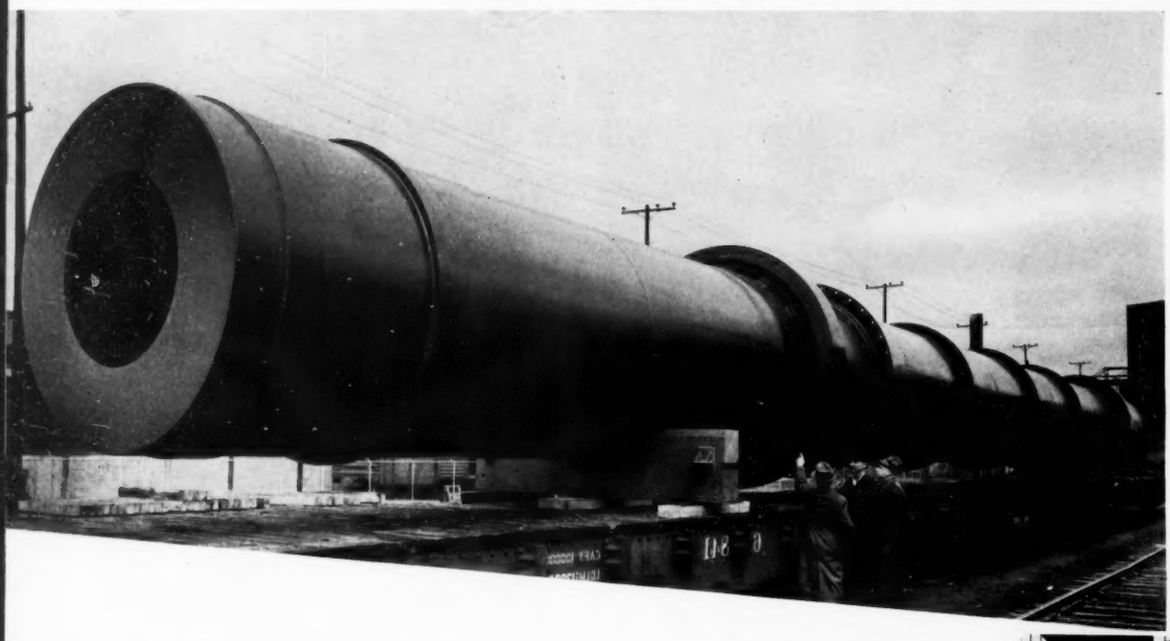
THE SHARPLES SOLVENTS CORP.

PHILADELPHIA • • CHICAGO • • NEW YORK

ADVERTISING PAGES REMOVED

CHEMICAL NEWS REEL

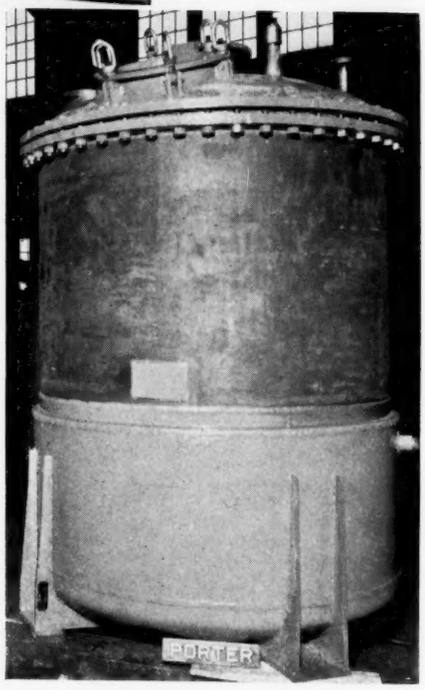
The Photographic Record of Our Chemical Activities



It took three freight cars to move this kiln which will be used by a paper mill for recovery of lime from sludge. Kiln is one of two largest, all welded, completely assembled ever built for shipment in one piece. Allis-Chalmers Mfg. Company, Milwaukee, fabricated both.

Two automobiles of "Plexiglas," transparent plastic product of Rohm & Haas, Philadelphia, will give visitors to New York World's Fair and San Francisco Fair an "x-ray" view of Pontiac cars. Model shown is complete in every detail except for insulating material used in production models.

Right — Two newly-designed stainless steel pressure kettles have been created by Processing Equipment division of H. K. Porter Company. Shells and bottoms are fabricated of type 347 stainless steel; covers are type 304 stainless.



Below—Annual sales conference of Continental Can Company at Greenbrier, White Sulphur Springs. Company officers were present, along with over 150 local and divisional sales managers and salesmen from U. S. & Canada.

NEWS OF THE MONTH

GOVERNMENT

Export Ban

UNLICENSED exportation of a large number of raw materials, chemicals, and metals widely used in the chemical industry is now a federal crime, carrying a penalty of $10,000 fine and two years imprisonment. The ban was announced last week in President Roosevelt's Proclamation in the interest of national defense.

Prominent among chemicals barred under the edict are toluol, ammonium compounds, and nitrates major quantities of which have found their way to foreign markets during the past several months. Materials are still exportable, but only under State Department licenses, issued at the discretion of Lieut. Col. Russel L. Maxwell, who has been named administrator of Export Control.

The chemicals specified in the Proclamation are:

Ammonia and ammonium compounds; chlorine; dimethylaniline; diphenylamine; nitric acid; nitrates; nitrocellulose, having a nitrogen content of less than 12 per cent.; soda lime; sodium acetate, anhydrous; strontium chemicals; sulfuric acid, fuming.

The following basic materials and products containing the same:

Aluminum, antimony, chromium, graphite, manganese, magnesium, mercury, mica, molybdenum, platinum group metals, quartz crystals, quinine, rubber, tin, toluol, tungsten, vanadium.

The President lost no time in issuing his Proclamation once Congress had empowered him to announce the ban on exports. This authorization was embodied in Section 6 of the "Act to Expedite the Strengthening of the National Defense" approved July 2.

Defense Research

The National Defense Research Committee, operating under supervision of the National Advisory Committee for Aeronautics, will utilize research facilities of the chemical and other industries. Specific task of the committee is to provide research concerning mobilization of national defenses, including defense of raw material sources, it is understood.

Committee, under chairmanship of Dr. Vannevar Bush, president, Carnegie Institute, includes the secretaries of war and navy departments. It will work in close cooperation with National Bureau of Standards, National Research Council, and Academy of Sciences.

Members of the committee are: Dr. Karl Compton, president, M. I. T.; Dr. Richard O. Tolman, California Tech.; Dr. J. B. Conant, president, Harvard; Conway P. Coe, Commissioner of Patents; Lyman J. Briggs, director, National Bureau of Standards; Dr. F. B. Jewett, president, National Academy of Sciences, and the previously mentioned secretaries of war and navy.

American Cartel

Governments of twenty American republics and the Dominion of Canada have been invited to a conference in Havana, to consider a plan for a cartel to govern practically all export commodities of the Western Hemisphere. Invitations were recently sent by the State Department which is now engaged in drafting plan for the cartel.

It is understood that program calls for setting up a huge trading corporation to be financed by U. S., which would buy and sell export materials normally shipped to Europe.

PERSONALITIES

Queeny Aids Willkie

Edgar M. Queeny, president of Monsanto announced that effective July 1st and until the November election, he will serve his company only half time and will receive only half pay, so that he can devote the balance of his time and energy in behalf of the presidential candidacy of Wendell L. Willkie.

Mr. Queeny revealed that at the last meeting of the Monsanto board of directors on June 20 he requested that he be granted a full leave of absence without pay and that upon refusal of the board to grant his request a compromise was reached whereby he will serve half time.

Edgar M. Queeny

GENERAL

Marine Changes Name

Marine Chemicals Company, South San Francisco, has changed its name to Marine Magnesium Products Corporation. Change was made in order to better express nature of company's business, which is devoted exclusively to production of technical and U.S.P. magnesium sales from sea water. Products include carbonates, hydroxides, and oxides.

Marine company, organized in 1927 by R. E. Clarke, president and general manager, is credited with being first to produce commercially any products directly from sea water except common salt.

Reichhold Expansion

Reichhold Chemicals, Inc., announces completion of installation of machinery and equipment in plant at Roseberry, suburb of Sydney, Australia. Company now has six factories in four countries,

Gillette Elected

Leslie S. Gillette, vice-president, Hazard Advertising Corp., was elected president, N. Y. Sales Managers Club. Mr. Gillette was formerly sales manager of U. S. Industrial Alcohol.

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GENERAL

Chicago Chemical Exposition

Plans for limiting space sold to individual exhibitors are being considered by committee in charge of National Chemical Exposition sponsored by Chicago Section A. C. S., in Hotel Stevens, Dec. 11-15. Demand of major chemical companies for multiple exhibit units, has made some control plan necessary, it was stated. Approximately 50 per cent. of available show space has been contracted for already, committee said.

Dr. R. C. Newton, Swift, chairman of the committee, reported that 68 per cent. of space assigned thus far has been to chemical manufacturers or laboratory apparatus people. Other 32 per cent. went to equipment manufacturers.

Serving on show committee are: Victor Conquest, Armour & Company; E. H. Harvey, consulting chemist; L. M. Henderson, Pure Oil Company; W. M. Hinman, Frederick Post Company; R. H. Manley, Research Foundation, Armour Institute of Technology; L. E. May, Sherwin-Williams Company; G. L. Parkhurst, Standard Oil Company of Indiana; and R. E. Zinn, Victor Chemical Works. Cary R. Wagner, Pure Oil Company, chairman of the Chicago Section, is a member ex-officio.

Exhibitors who have reserved space follow:

Ace Glass, Inc., American Foundry Equipment, American Instrument, Armour, Atlas Electric Device, Atlas Powder, Barnstead Still & Sterilizer, Barrett-Cravens, Buffalo Foundry & Machine, Central Scientific, Chem. & Met., Coleman Electric, Commercial Solvents, Corning Glass, Denver Equipment, Dicalite, Dorr Co.

Also Dow, Equipment Preview, Fansteel Metallurgical, B. F. Gump, W. A. Hammond Drierite, Hasco Valve & Machinery, Haveg Corp., Heil & Co., International Filter, Kewaunee Mfg., Kimble Glass, Koppers, Loeb Equipment Supply, Marathon Paper Mills, Merco Nordstrom Valve, Miner Laboratories, Morse Magneto Clock.

Also National Carbon, National Technical Laboratories, Newport Industries, Pfaudler Co., E. W. Pike, Reilly Tar & Chemical, Reinhold Publishing, C. Robinson Mfg., Ross & Rowe, Sarco, A. E. Schaar, Sivyer Steel Casting, Foster D. Snell, Standard Oil of Indiana, Victor Chemical, and Wilkens-Anderson.

Merck Wins Damages

Merck & Co., Inc., and Boyce Thompson Research Foundation, Inc., have been awarded judgments by N. Y. Supreme Court against John V. Stanger and Pennsylvania Chemical Corp. Under the terms of the judgment, Stanger is prevented from marketing "Auxilin," root-growth product which was held to have infringed on formula of "Hormodin," Merck product which is manufactured under license from Boyce Thompson.

Court ordered accounting of Penn.-Chemical profits, awarding damages, court costs and disbursements to Merck and the Foundation.

Potash Charges Quashed

U. S. District Court recently quashed charges that American Potash & Chemical Co., as well as other major potash producers had violated Sherman anti-trust law. Under civil decree, concurred in by Department of Justice who was pressing the suit, it was recommended that companies quote for forthcoming fertilizer season a differential between port and mill price. Selling carloads to agricultural consumers for their own use was approved, providing no violation of state law is involved, and that consumer is not forced to become a registered fertilizer dealer or mixer because of the sale.

Show committee, Chicago A. C. S., study floor plan for November Chemical Exposition.

John Hecker, Gillespie-Rogers-Pyatt, and C. V. Douglas, Diamond Alkali, leave the chemical trade far behind as they skim over the briny deep in John's boat Jabo.

Buys Plaskon Interest

Controlling interest in Plaskon Co., Inc., producer of urea-formaldehyde molding compositions, has been purchased by Libby-Owens-Ford, John Biggers, president, announced late in June. James L. Rodgers, Jr., president, will continue in management of Plaskon, which will be operated independently. His executive and research staff will also be retained.

Growing relationship of basic plastics to flat glass products was given as reason for move by Libby.

New Cyanamid Acquisition

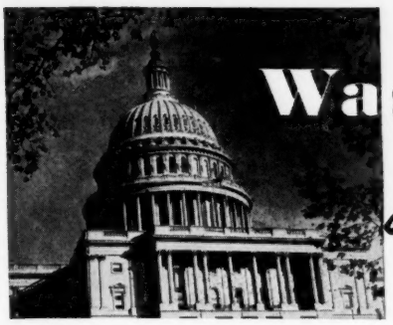
American Cyanamid has acquired part of Bennett, Inc., business relating to manufacture and sale of wax-rosin size, all wax size, and liquid rosin size to the paper, paper board trade, and related industries. It also obtained exclusive license under all Bennett, Inc., patents, exclusive of those outstanding. Move was made as step to supplement Cyanamid's line of paper sizes.

Continental Can Builds

Continental Can Co., Inc., has awarded contract to Austin Co., for construction of a can manufacturing plant at Walla Walla, Wash., for December completion.

Crown Gurantees Prices

Crown Cork & Seal Company is guaranteeing present prices on Crown contracts until Sept. 30.



Washington

Russell Kent

INDUSTRY should prepare itself for three things in connection with the national defense program: (1) profit limitation, (2) heavy taxation, (3) possible regimentation.

Bills of the utmost importance were rushed through Congress in the last two days preceding the week's recess for the Republican National Convention, with many of their sweeping provisions escaping general notice and with relatively few members of Congress realizing their scope.

The tax bill enacted that week embodies the heaviest imposts upon corporations that ever have been provided in this country in a time of peace. But more is to come, and applicable to 1940 incomes.

Russell Kent

The corporation income tax rates which were written into the 1939 revenue act, on which nothing has been paid yet because the provisions applied to incomes earned in 1940 and payable in 1941, were increased 1 per cent., flat, by the June bill, with 10 per cent. to be added to the tax liability calculated by the rates. For example, the 18 per cent. income tax rate applicable to corporations with net incomes of $25,000 or more was increased to 19 per cent. This, with the 10 per cent. "defense" tax added to the calculated tax liability, makes an effective tax rate of 20.9 per cent. The lowest effective rate is 14.9 per cent., on corporations with net taxable incomes of not more than $5,000. In the World War No. 1 period, the corporation income tax was 10 per cent.

Formal notice was served upon business and industry by the conferees on the tax bill, by a resolution which they adopted, that, in addition to the rates of this new law, an excess profits tax is to be adopted, and to be applied to 1940 incomes. The Treasury and the staff of the Joint Committee on Internal Revenue are making studies of recommendations for an excess profits tax and will report before Oct. 1. It is proposed to enact the law either this fall or after Jan. 1, 1941, but in either event the provisions will be applied to incomes of this calendar year.

The basis of this tax, whether it will be founded upon invested capital or upon an average of net earnings in any period prior to 1940, and the rates are not clearly in prospect. The LaFollette excess profits tax, which the Senate attached to the tax bill in June but which was rejected in conference, was based upon invested capital. It exempted the first $3,000 of income, then applied a tax of 20 per cent. on the first 20 per cent. of earnings on invested capital minus this allowance and a rate of 40 per cent. above 20 per cent. net earnings.

There was no significance attached to Senate adoption of the LaFollette amendment, other than an expression of Senate sentiment that an excess profits tax must be worked out. That amendment was adopted after two hours debate merely because the Senate was rushing along and would rather approve an amendment than debate longer about it. The same observation accounts for Senate adoption of the Connally war-tax plan, which would, in a time of war, impose entirely new rates on all forms of taxation except excise taxes. This, also, was rejected in the conference.

"Speed Up" Bills

When it is remembered that the excess profits tax is to apply above the ordinary corporation income tax rates, it may be realized that the tax burden is going to be high, and very soon. The June law increases the capital stock tax, which may be declared anew in July, by 10 per cent.; also the complementary excess profits tax which implements the capital stock tax.

It is difficult to see how corporations can, with safety, fix dividends for the third and fourth quarters of 1940 without being able to determine the amount which necessarily must be reserved for taxes, and a slowing of dividends until the excess profits tax has been fixed appears to be one of the results not anticipated by the members of Congress handling revenue legislation.

As to profit limitations, on national defense contracts, there appeared in the last 10 days of the June session a very definite move, which escaped general attention despite its importance.

In handling the Navy "speed up" bill, the Senate Committee on Naval Affairs attached an amendment, which was adopted by the Senate and accepted by the House conferees and was included in the bill as it was sent to the White House. This amendment limits to 7 per cent. the profit which may be made on all negotiated contracts with the War and Navy Departments; 8 per cent. on contracts by competitive bids for Army and Navy aircraft and naval ships; no profit limitation on contracts by competitive bids on materials and supplies other than aircraft and naval ships. An incentive clause, to hold final costs below estimates, is inserted so that on negotiated contracts a profit of as much as 7.56 per cent. may be made, and on contracts by competitive bids for aircraft and naval vessels, 8.7 per cent.

It is obvious that it is the intention of the administration to effectuate most of its Army and Navy contracts by negotiation, rather than by competitive bidding, for by that method allocation of orders may be accomplished, and the time necessary for advertising for bids may be saved. So, the 7 per cent. profit limitation will apply to most of the awards. Negotiated contracts are to be let on the cost-plus-fixed-fee basis, the fee to be fixed on the basis of the estimated cost. Cost-plus-a-percentage-of-cost contracts are expressly forbidden, as this system is charged with having run costs up tremendously during the World War No. 1 era.

Tax Burden To Jump

The Army and Navy "speed up" bills, which complement one another closely and should be considered as one, provide for regimentation of industry whenever it is considered expedient to do so. They re-enact, in effect, the provisions of section 120 of the 1916 National Defense Act, which empowers the President, in time of war or when war is "imminent," to requisition plants desired for national defense production, and otherwise to assure output.

Under provisions of the Army-Navy bills, the Secretary of War or Navy may requisition a plant if cooperation of its ownership is found impossible; the Government may build and operate plants; it may build and equip plants and lease them to private management, or sell them to private ownership; it may subsidize private plants; it may place inspectors and supervisors in private plants having national defense contracts.

This provision amply implements the plan of the War Department, endorsed by the Stettinius-Knudsen National Defense Advisory Commission, to have con-

(Continued on page 71, Col. 2)

HEAVY CHEMICALS

Spot Bichromates, Oxalic Acid Command Premiums

Contracts for Third Quarter Contain Few Changes—Zinc Sulfate Rises Fractionally—Six Months' Business Over Last Year—Price Shading Reported on South American Orders

AS predicted here last month, new contracts for heavy chemicals contained few price changes. Zinc sulfate, crystals and flake, went up 15c per hundred, with powdered up 20c. This was the only important item to move on the list of one of the largest factors. Business continues normal for this season, with June a bit under the preceding two months in volume. Showing of first six months is far ahead of last year's bookings during the same period.

Bichromates and oxalic acid remain tight. Contract buyers are receiving goods, but spot merchandise commands a premium running as high as 6c per pound on both items.

Exports, generally, are good. South American orders, however, are still slightly disappointing. German agents' warehouses which bulged with chemicals shipped in anticipation of the war are now bare, according to best reports. It was a transfer, though, with most of the goods now in inventories of consumers—at a price.

Important Price Changes

	June 1	June 30
ADVANCED		
Antimony oxide	$0.11	$0.13
Arsenic, white	.03	.03¼
Barium chlorate	.20	.25
Magnesite, calcined, dom.	58.00	60.00
Potassium metabisulfite	.13	.15
Zinc sulfate, cryst., bgs.	2.75	2.90
DECLINED		
Barium hydroxide, imp.	$0.06½	$0.05½
Barium nitrate	.09½	.08¼
Fluorspar, washed gravel	21.00	20.00
No. 2, lump	21.00	20.00
Tin, metal, straits	.54	.53
tetrachloride	.26½	.26

As the market broadens there would seem to be good grounds for fear of price shading. It has already appeared, though mildly, on sulfate of aluminum and sodium sulfate. Heavy tonnage orders hold the same appeal for some sellers whether written in English or Spanish. While there is no danger of a real break in export quotations, our Latin neighbors may soon be taught to shop around on all orders trying to find a weak spot in the market.

Interesting indeed is the fact that with all talk of fascist inclinations in South America, a definite pro-Ally feeling has developed in many states. It is most noticeable in Peru, Chile, and Columbia. Several German agents in these countries have gone out of business, with a good part of their failure traced to sympathetic tendencies. U. S. agents are benefitting accordingly.

Mexico is still dead as a market and will remain so until after election.

Far East Is Buying

East Indies and French Indo China are both buying nice quantities of formic and glacial acetic acids. Situation will bear watching, however. Holland's plight has not told on its East Indies possessions. After a slight lag while Japanese intentions became known, this colony is now calm industrially, and paying for its chemical imports with its own gold.

Japanese inquiries which came into the market in May did not materialize into business. It is considered in informed quarters that Japan was checking the market through one of its important representatives.

Heavy chemicals showing price movements during the period under review will be found in the accompanying box.

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Fingerprinting Discussed

Development of the art of fingerprinting, and practical operation of the registration system is discussed in the feature article of *Prioritics*, house organ of Prior Chemical Corporation. Protection to individual and public in general which would accrue from universal registration is outlined and instances are cited which lend strong emphasis to this theme.

Monsanto Adds Furnaces

Monsanto plans additional electric furnace capacity for elemental phosphorus production at Monsanto, Tenn., plant. Work, to start shortly, will be completed early in '41, company estimates.

Du Pont Starts Building

Du Pont has started construction work on $100,000 building in New Brunswick, N. J., to house offices, laboratories for use by organic chemical department, R. & H. Chemical division.

Ammonium Thiocyanate Plant

First U. S. plant for production of ammonium thiocyanate crystals is now being built by Koppers Co., for Eastern Gas & Fuel Associates, Everett, Mass.

Harshaw Adds to Plant

Harshaw Chemical starts building for manufacture of fluoride products in Cleveland which will double production.

FINE CHEMICALS

Caffeine, Theobromine Price Up 40¢ Lb.

Producers Rationing Supply to Contract Buyers—Mercurials Advance Again—Government Orders Seen for Mercury Oxide —South American Orders Boost Volume—Menthol Drops

PRODUCERS took advantage of the revision clause in yearly contracts on caffeine and theobromine. Both are up 40c per lb. during the third quarter, and material is being rationed out on contracts. A consumer holding a contract for 1,200 lbs. annually, for example, can withdraw 100 lbs. a month. No more.

Supply situation remains as it was during May. There are plenty of buyers for both items, but no spot material. Contracts are taking up all available supply, although the price could very probably be doubled if material was sold as spot merchandise, which puts producers in the chemical field's fast growing Yankee Doodle brigade. No one had to legislate this business loyalty.

Mercurials took another swing up the price ladder. The advance was accurately predicted in this department ten days before the price rose. It is hardly the end, unless conditions in Europe become settled over night. The primary market is such that one replacing order from a large consumer can cause a major jump in price.

Mercury oxide at $3.11 (up last month from $2.81) is still far below the price at which it is good business for producers to sell the item. Oxide contains 94 per cent. mercury. With the metal at $198 per flask of 76 lbs. there is no businesslike margin. Then, too, in the not very distant future, government orders will flow into the market for big volume. This item is used in marine paint to coat ship's bottoms. The defense program will use plenty.

Ceiling Not Reached

It can be said with confidence that the ceiling on mercurials is not yet reached.

New mines going into production will hardly help mercury prices. Labor cost is the factor which prohibited competition with foreign material. Thus nothing short of the re-entry of imports from Spain and Italy will bring this price anywhere near normal. Normal price for mercury is $82 per flask.

While domestic business continues ahead of last year, exports are boosting volume considerably. A further gain was felt in South America. Iodides and bismuths were in the vanguard of items receiving heavy call.

Pricewise, there was little that could not have been predicted from the trend of last month. Rochelle Salt which lagged when other tartar products moved up in May, is now 2c higher, along with cream of tartar and tartaric acid. Primary market strength is reflected here.

Important Price Changes

	June 1	June 30
ADVANCED		
Caffeine	$2.20	$2.60
Citrated	1.80	2.00
Hydrobromine	4.91	5.21
Calomel	2.70	2.95
Cream tartar, gran. or powd.	.32¼	.34¼
Ethyl formate	.23	.25
Mercury bisulfate	2.82	3.02
Oxide, tech.	2.81	3.11
Rochelle Salt, cryst.	.23¾	.25¾
Tartaric acid, USP, dom., cryst.	.39¼	.41¼
DECLINED		
Mannitol, com'l. grade	$0.42	$0.38
Menthol, USP, natural	3.60	3.55
Silver bullion	.35⅝	.34¾
nitrate	.27⅜	.26⅞
Sorbitol, com'l, sol.	.15½	.14¾

Personnel

H. D. Ellis elected president, Wilson & Bennett Mfg. Co., Chicago, succeeding Wilfred Sykes . . . Titanium Pigment changes: G. W. Corddry named general sales manager succeeding I. D. Hagar who joins executive staff; L. G. Reichhard named to directorate along with Corddry; D. W. Edgerly elected vice-president; K. W. Ericson appointed western sales manager; E. L. Eliot named western representative; H. E. Bottemiller, Ohio representative.

I. D. Hagar

Frank Washburn has been appointed director of sales, American Cyanamid, with Horace Cory as assistant director . . . Ned Brundage has resigned from Michigan Alkali and will shortly announce future plans . . . A. E. Forster has been named assistant general manager, naval stores department of Hercules Powder . . . Dr. Lincoln T. Work, associate professor of chemical engineering, Columbia, appointed research director, Metal & Thermit Corp.

Robert L. Clause named executive vice-president, Pittsburgh Plate Glass; other P. P. G. appointments are: John A. Wilson, manager of glass manufacture; D. G. Hill, superintendent of plate glass factories; R. B. Tucker, director of glass sales; B. J. Cassady, general manager of warehouses . . . Dr. Kenneth Morgareidge, former chemistry instructor, University of Rochester, joins vitamin laboratories staff, National Oil Products.

F. H. Steel has become a member sales engineering staff, Fansteel Metallurgical . . . John Sillinglaw named purchasing agent, Allegheny Ludlum Steel; Deane Murphy becomes eastern manager of flat rolled carbon steel sales . . . V. L. Roberson named sales manager, specialties division of Pennsylvania Refining . . . C. J. McCormack becomes southern representative, Milligan & Higgins . . . Dr. Peter J. W. Debye appointed professor and chairman of chemistry department, Cornell . . . C. A. Meyer and F. E. Bell, Jr., join Barrett Company technical sales staff; A. W. Browne joins rubber laboratory staff.

Universal Gear Corporation appointments: J. Y. Dahlstrand, director of sales and engineering; L. G. Barnes, manager Chicago office and supervisor all Illinois and Iowa branches; M. E. Robbins, assistant sales director, supervising all eastern sales districts; James T. Castle and associates as Pittsburgh district representatives . . . A. W. Limont, Jr., formerly with Du Pont joins Titusville Processing Equipment Division, Struthers-Wells . . . G. B. Flanigan appointed New York district manager, Chain Belt Company, succeeding W. H. Quinn, deceased . . . E. W. Reese has been appointed general sales manager of Emery Industries, Inc., Cincinnati.

Quicksilver Mines Sold

New Idria Quicksilver Mining Company, Hollister, Cal., has been purchased by Van Alstyne Noel & Co. Company's properties comprise about 4,500 acres, including New Idria and San Carlos mines in Benito County. H. W. Gould, San Francisco mining engineer, retains his interest and position of vice-president and general manager.

Glyco Moves Branch Office

Glyco Products Co. has moved its Philadelphia branch to 36 Kenilworth St. Mr. Leonard S. Levitt, who has been technical representative in that territory becomes sales manager.

General Potassium Cyanide

General Chemical Company has begun domestic manufacture of potassium cyanide, chemical used in the gold and silver plating industries. Material was formerly imported from Germany.

COAL TAR CHEMICALS

Toluol Situation Seen Changing Rapidly

Spot Material Turns Up in Large Quantities—Speculators Face Huge Loss on Stocks Bought For Export—Days of 60c Export Price Seen Over—Benzol Consumption Picks Up

IT looks very much as though the honeymoon is over for toluol suppliers. Price was raised 2c on July 1, but with export market, more or less out of the picture due to entry of Italy into the war, and the exit of France, best informed quarters look for at least a mild glut.

In the reportorial rounds for this issue, saleable quantities up to 1,000 tons were discovered. Most of it, of course, represents "beached" material. There are quantities available which have been paid for by foreign buyers at fancy prices before swift-moving events closed egress to its destination. Just how much "speculation toluol" is available would be a trying guess. But if you are guessing, make it high.

Many speculators are caught in the middle with goods wheedled from consumers. England might take some, but wouldn't trade dollar for dollar even at the price speculators paid. Informed conjecture is that this material reached them at between 40 and 50 cents in drums. England will pay 30, but they are stocked up until '41. (There is no question but that toluol could move to United Kingdom ports notwithstanding the Export Control Proclamation.)

"Overnight Brokers" Hit

Thus, it looks as though there will be some thinning in the ranks of overnight brokers. Nitration toluol was their baby. Some in the trade will enjoy seeing them walk the floor with it.

Toluol is not a storage item. No light oil distillate is. Consumption must, therefore, follow production pretty closely. In normal times, exports take up the slack during summer months when Detroit auto trade is changing over designs. This year, there are no exports to speak of. Hence the anxiety about strength of the market.

One answer would be government orders. It goes without saying that defense needs will provide a leveling factor. But just when defense needs will enter the market is another question. Informed opinion is that this business is three months off.

Tipoff on the situation comes from producers who, in May, were demanding that quantities of benzol be taken with orders for toluol. Buyers needn't do so today. While strength developed in benzol during June due to the motor benzol season, this is not considered the full answer. Especially inasmuch as the motor benzol business in a world at war is nothing like previous years.

Important Price Changes

ADVANCED

None

DECLINED

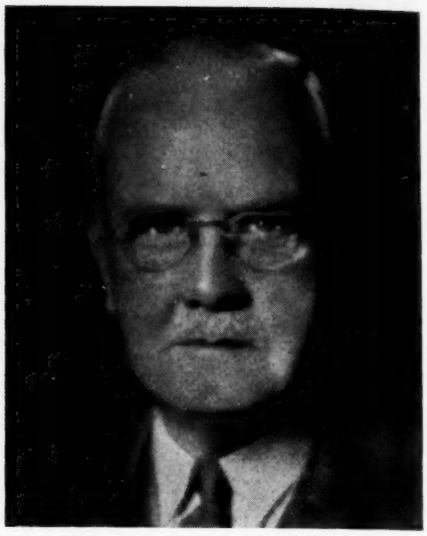
	June 1	June 30
Metanitroparatoluidin	$1.30	$1.05

Xylol gained a bit during the period under review. All in all, however, June business was off as compared with the previous two months of the quarter. The summer lull also reached intermediates.

OBITUARIES

William A Harshaw, 78, founder and board chairman, Harshaw Chemical Co., died at his Gates Mills, Ohio, estate, after six weeks' illness.

Mr. Harshaw began his career with Meyer Bros. Drug Co., wholesalers, moved on to Lord, Owen & Co., Chicago wholesaler, and to Strong, Cobb & Co., Cleveland private formula drug manufacturer, before forming his own Cleveland Commercial Co., which later became Harshaw Chemical.



WILLIAM A. HARSHAW

William Wallace Buffum, 61, treasurer and director, Chemical Foundation, Inc., died in Montclair after a brief illness.

Other Deaths

Frank Hartley, Sr., 83, treasurer, Amalgamated Color and Chemical Co., died suddenly in Boston . . . Harry T. Smith, traffic manager, Worthington Pump, died at his Metuchen, N. J., home.

AGRICULTURAL CHEMICALS

Cyanamid Contracts Withheld Until Fall

Ammonium Sulfate Surprises By Remaining Unchanged in New Contracts—Sodium Nitrate on Same Basis—Potash Again at 53½c—Export Call Dwindles—Minor Fertilizer Items Sag

THIS is the booking season for agricultural chemicals, as contrasted with the selling season. So, during last month, selling of raw materials was at a standstill. Speculation was rife, however, as to the exact terms of contracts covering the '40-'41 season. All of it seems to have been wasted.

Ammonia sulfate which was considered most likely to jump can be bought on the same terms as the season just closed. Nitrate of soda will carry the same price tag, namely $28 per ton, for the July to December period with the usual $1 boost from January to June.

Potash is unchanged. Muriate price is 53½c per unit K_2O in bulk, ex-vessel principal United States ports. Trona price is 8c below the net ex-vessel price at Pacific coast ports. When shipped in 200 lb. burlap bags, $2 per net ton of salts is added. Sulfate of potash is $36.25 per ton in bags, basis 90% K_2SO_4 ex-vessel. In bulk it is $2 per ton less.

Important Price Changes

ADVANCED

None

DECLINED

	June 1	June 30
Blood, dried, dom.	$2.75	$2.35
high gr.	2.75	2.00
import.	2.60	2.25
Bone, raw, dom.	32.00	30.00
Nitrogenous mat., imp. ..	2.40	2.20
Tankage, animal, dom. ..	2.75	2.25
unground, feeding	2.75	2.25
high grade feeding	2.75	2.10
imp., S. Amer.	2.90	2.40

Cyanamid, about which there was a great deal of conjecture, can be had at unchanged price until September 1. At that time, definite sales policy as well as price is expected to be announced.

Export inquiry remains unabated on ammonium sulfate and sodium nitrate. Both are on the export control list.

RAW MATERIALS

Cautious Buyers Order Only Replacements

Chinawood Oil Strengthens Due to Uneasiness Over Shipments—Carnauba Eases as More Material Reaches Market—Exchange Promulgates New Rules on Rosin, Turpentine Sales

MARKET reports from dealers in miscellaneous raw materials such as fats, oils, waxes, and naval stores indicate a continuance of caution and quiet conditions which have prevailed for some time. Many of the consumers still hesitate to commit themselves for more than immediate needs. The uncertainty occasioned by war and disrupted international trade as well as the domestic political situation are usually credited with responsibility for this cautious attitude.

The slight strengthening of the local chinawood oil situation reflects the concern of importers over the feasibility of continued shipments through French Indo-China. Since Japan has begun to broaden her sphere of influence and control in the Far East and has announced that shipments of munitions must not be carried through this French possession into China, many believe that chinawood oil, among other commodities, will similarly be restricted.

Carnauba Still Easy

In view of continued better supplies of carnauba wax from South America this commodity has experienced a further definite easing of the price structure.

The naval stores market has remained quiet. Government held supplies were put back on the market on June 26. The effect of this additional supply was not particularly notable. Rosin prices did take a slight downward trend but turpentine held steady.

Reported sales of turpentine and rosin in the Savannah market were rather light. According to some sources, however, the movement of both materials to consumers held up rather well. This led to a more or less cheerful attitude, although with a combination of excessive stocks, rapidly dwindling export demand, artificial price levels and overproduction a long range view of the situation is not one of optimism.

Savannah Changes Rules

Several changes in rules governing transactions on the Savannah market went into effect on June 20. Hereafter gum rosin will be offered and sold by individual grades, displacing present system of offering whole lines of grades. It was further reported that turpentine sold on the same exchange will be offered and sold on a bulk or tankcar basis, instead of barrels, and that rosin will be sold on a basis of one hundred pounds instead of two hundred and eighty. The changes already instituted as well as those contemplated seem to have the approval of both buyers and sellers.

Important Price Changes

	June 1	June 30
ADVANCED		
Lard, N. Y. City, tubs	$5.50	$5.75
Oil, chinawood	.22½	.23½
Olive, denat.	1.25	1.50
Tallow, animal, edible	.04½	.04⅝
DECLINED		
Acid, caproic	$0.35	$0.30
Stearic, dist., double pressed	.10½	.09¾
Carnauba Wax, No. 3, chalky	.58	.54
Gum, Rosin	4.75	4.35
Oil, Corn, crude	.05¾	.05½
Linseed, raw	.1020	.0960
Menhaden, refd., alkali	.079	.077
Peanut, crude, dom.	.05⅞	.05½
Soybean, crude, dom.	.06⅝	.06

WASHINGTON

(*Continued from page 67*)

structed defense factories to fill gaps in private industry which would cost about a billion dollars. The factories contemplated are those which would have no commercial value; purely for production of war materials, or enlargement of industries, such as aircraft, which have commercial value but far beyond their commercial requirements. Navy has some plants, such as those for armor plate, which it desires to have built in similar manner.

Col. James H. Burns, executive assistant to the Assistant Secretary of War, laid before the House appropriations committee a tentative list of plants which are desired, the cost totalling $963,000,000.

Included in this list are 17 chemical plants, to cost an estimated aggregate of $283,000,000, fully equipped, and 28 plants for the Chemical Warfare Service to cost an estimated $39,500,000. The chemical list includes four smokeless powder plants, to cost, equipped, an aggregate of $188,000,000; four TNT plants, $42,000,000; two tetraethyl plants, $6,000,000; two picric acid and explosive D plants, $8,000,000; two cotton purification plants, $6,000,000; two ammonium nitrate plants, $18,000,000; and one ammonia plant, $15,000,000. For the Chemical Warfare Service, there is contemplated an addition to the present arsenal to cost $4,000,000; a new arsenal to cost $26,500,000, and facilities at 26 commercial plants to cost an aggregate of $9,000,000.

Included in the Supplemental National Defense Appropriation bill is $34,000,000 for a smokeless powder plant, by direct appropriation. There also is $200,000,000 for the Secretary of War to build or subsidize plants. In addition, the President has a fund of $200,000,000, for both Army and Navy, in another appropriation bill, which he may devote to the same purpose. Plus this, the Reconstruction Finance Corporation, in separate legislation, has been authorized, without dollar limit, to finance plants for the national defense—Government or private plants.

Furthermore, the Army-Navy "speed up" bills authorize the Secretaries to advance 30 per cent. of any contract, to pay for equipment of smaller plants.

Agreements With Contractors

Importantly, also, it is provided that the Secretaries may agree with contractors, in advance, as to the amount to be charged against contracts for installation of required equipment, this agreement to be reported to the Commissioner of Internal Revenue. This approaches, but does not completely cover, the question of amortization. The amortization question is to be written into direct legislation in the next revenue bill, being studied along with the excess profits problem.

The Tennessee Valley Authority has secured a Budget proposal for an appropriation of $25,000,000 for a new dam, additional installations at existing dams, and a new steam plant to produce additional electricity to care for national defense demands in its area, including chemical plant activities. The final estimated cost is $65,000,000. This was not provided in the Deficiency Appropriation Bill, owing to controversy, but a new request is being formed. TVA or the War Department, or both, plan to recondition Nitrate Plant No. 2 at Muscle Shoals, at a cost of from $3,000,000 to $6,000,000.

Prolongation of the session of Congress means that some bills considered dead will be revived and others which had a good chance for passage a month ago now will be killed in the name of defense.

Labor Riding High

Labor, thus far, has been riding high in the defense bills. Efforts to do away with the Walsh-Healey act in the emergency, due to reluctance of some contractors to put themselves under the supervision of the Department of Labor, failed on direct orders from the White House. The defense acts provide that all contracts, negotiated or by competitive bidding, shall be under the Walsh-Healey Act terms. But they also provide that the President, instead of the Secretary of Labor, may suspend this act. Time and a half must be paid on all Government orders for weekly hours over 40. But provision is made for training of apprentices by the Government.

SOLVENTS

Automobile Change-Over Season Affects Market

Specialty Solvents Used As Toluol Substitutes May Slump—Acetone Withdrawals Keep Pace With Production—Speculators Taking Loss—Export Picture Gloomy—Methyl Acetone Drops

RECESSION of the automobile trade from the solvents market brought a decline. Small buyers were active, but orders from large volume consumers, tied up pretty well with the automotive trade, were off from 25 to 50 per cent. However, position remains good as inventories are not large, and prices are holding.

Certain specialty petroleum solvents used as substitutes for toluol may feel a lag shortly. This business was going at a furious pace during May. By the time the automobile trade returns to the active market, toluol may be splashing all over the place.

Acetone continues to be withdrawn on contract at a pace in step with production. There were large inquiries for export on this item few months ago, but they have dwindled. After all, where would export inquiries originate these days?

Demand slackened a little further on methyl ethyl ketone, and methyl acetone weakened, its price dropping 3½c during the period under review. Isopropyl continues good on borrowed volume due to nuisance value of government taxes on ethyl.

Export Loss a Blow

Elimination of European countries from the market has dealt a severe blow to solvent exports. Most of the material moved to Switzerland for either re-manufacture or re-export. There is no way of getting it there now.

South America has never been sharp in the export picture. They take their lacquers straight down there. They aren't familiar with uses of the solvents, and education would be too big a job to be businesslike if done in person. It is impossible by mail.

"Speculation acetone" now in dealers' hands is weak. This is mostly scavenged material brought up from consumers. Almost certainly, they will take a loss.

Such solvents as moved to China and Japan have felt a lag. There is a general tightening up due to exchange.

Canada is taking butyl alcohol, acetate, and some plasticizers in fair volume.

But there is gloom on the export horizon as far as solvents are concerned.

National Pigments Change

Former National Pigments & Chemical Company has changed name to Baroid Sales Division, National Lead Company, and moves offices to Los Angeles. Plant at Fountain Farm, Mo., remains.

Important Price Changes

ADVANCED

	June 1	June 30
None		

DECLINED

Methyl acetone, nat., producer group A	$0.41	$0.37½

Monsanto Training Offer

Monsanto employees who are members of National Guard will be permitted to devote three weeks to training without loss of income.

Connecticut Golfers Win

Western Connecticut A. C. S. golfers demonstrated their superiority over N. Y. section at a tournament staged at Innis Arden Club, Old Greenwich, Conn. Winner of the Littell Trophy was R. C. Swain, Cyanamid, with a low gross of 84. Kickers handicap prize went to Wendell Fogg of Air Reduction.

Rohm & Haas Buys

Rohm & Haas has acquired $250,000 Philadelphia plant of Peter Cooper Corp., in expansion move. It adjoins plant of Charles Lennig & Co., Rohm and Haas subsidiary.

Carbide Texas Plant

Carbide is expected to start work shortly on new plant at Texas City, Tex. Number of frame buildings have been erected on site for construction crew.

White Tar Re-builds

White Tar Co. of N. J., Inc., has awarded contract to Koppers Co., for erection of naphthalene refining, disinfectant equipment to replace units damaged by fire.

Titanium Office Moved

Titanium Pigments Corp., has moved its western sales office from St. Louis to 104 So. Michigan av., Chicago.

PIGMENTS AND FILLERS

First Half Business Well Ahead Of '39

Some Buying For Delayed Outdoor Season in Market Last Month—Titaniums Continue Active—Price Rise Looked For in Spanish Reds, Ochres—Exports Off—Casein Holds Gain

SIX months' business in the pigment field has run well ahead of the corresponding period last year. Gains have held throughout, although the second quarter, naturally, was below the level of the first three months, when carryover business from the "war scare" quarter of last year was still being shipped. Better prices would have boosted dollar volume regardless of a tonnage increase. However, there has been a good tonnage increase to boot.

Of course, first six months of '39 called for no dancing in the streets. Yet fair volume was shipped, and '40 first half borrows strength from the fact that there was no outdoor paint season. Some volume from paint trade showed up during past month, which indicated delayed outdoor painting. Most factors, however, feel that this business is lost until Spring.

Pigments gained seasonally, titanium material especially continued to move in high volume.

Carbon black which slowed in May went over the top during June. Akron rubber center, largest consumer, bought in volumes which screamed "inventory." Price rise of ¼c on July 1, was the reason. New carload prices on 100 lbs. are: compressed $2.75 in tanks, $2.92½ in bags; non-compressed $3.07½ in bags, all f.o.b. Amarillo, Tex. Compressed is 6½c and non-compressed 7c l.c.l., f.o.b. warehouse or delivered.

Prices in colors and pigments have held at previous levels. Only items watched for movement are Spanish Reds and French Ochres, both imports.

Casein held its price gain during period under review. Paper trade is accounting for nice volume, and chances are that normal domestic flush could be absorbed. There is, however, some anxiety regarding large flush of Argentine material which, lacking buyers in its point of origin, may eventually find its way north to complicate matters in a somewhat reminiscent way.

South American inquiries for pigments are not as lively as formerly. England is buying, and there are good inquiries from the East Indies.

Important Price Changes

ADVANCED

	June 1	June 30
Carbon black, reg. uncomp.	$0.0280	$0.03075
Casein, imp., Argent.	.11½	.12
Ethyl formate	.23	.25
Mercury oxide, red, tech., dom.	2.81	3.11
yellow, tech., dom.	2.66	2.96

DECLINED

Gum, Copal, Pontianak	$0.15½	$0.15⅜

ADVERTISEMENT—*This entire page is a paid advertisement.* *Prepared Monthly by U. S. Industrial Chemicals, Inc.*

U.S.I. CHEMICAL NEWS

July ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1940

Acetone Used in Large Quantities By Oil Industry

U.S.I. Product Employed in Dewaxing of Lubricating Oils

Acetone is one of the U.S.I. products that find extensive use in the petroleum industry, particularly in the manufacture of products of a specialized nature.

The major use of acetone is in the manufacture of lubricating oils. These oils are made from the heavy lube distillate in the lower part of the fractionating columns. After the distillate has been treated with acid, caustic, and water, the acetone is used to separate the waxes from the oil. Because acetone is an exceptionally active solvent for waxes and many other organic compounds, it is very satisfactory for this application.

Another U.S.I. product used by the petroleum industry is alcohol. Its chief application is in the production of white mineral oils. In this process sulphonated soaps are formed, and extracted with alcohol.

S. D. Alcohol Formulas 1, 2-B, 3-A, 12-A, 13-A, 23-A, and 30 are authorized for use in extracting petroleum products.

Comparative evaporation rates of the most commonly used solvents for nitrocellulose lacquers are shown in graph form in a bulletin prepared by U.S.I for free distribution. Graphs give relationship between time and per cent evaporated. Write U.S.I. and ask for Bulletin ER.

Uses Butyl Alcohol to Make Transparent Colors

MANNHEIM, Germany—How transparent colors for lacquers can be prepared with the aid of butyl alcohol is revealed in a U. S. patent granted to an inventor here and assigned to an American firm.

The butyl alcohol, according to the patent, is employed to form solutions of organic dyestuffs. The solutions can be incorporated in lacquers that have been prepared with the aid of chemical drying binding agents such as linseed oil, wood oil, or the condensation products of polyhydric alcohols, it is claimed.

By this process, it is easy to obtain highly colored transparent lacquers of excellent fastness to light, it is reported. Derivatives of ethylene glycol may be used in place of butyl alcohol.

Butyl Alcohol is produced by U.S.I.

Treats Casein in Alcohol To Get New Thermoplastic

AUBIERE, France—A new thermoplastic composition that resembles celluloid in many respects can be made by treating casein with ethyl sulphate in the presence of ethyl alcohol and a weak alkali salt, according to a U. S. patent granted to an inventor here. The patent is assigned to an American firm.

According to the inventor, the composition becomes soft at approximately 110°C.; is plastic enough to form or roll at 80°C.; is suitable for compression or injection molding in powdered form. Suggested uses are said to include films, caps, closures, and the intermediate layer in safety glass.

Ethyl Alcohol is produced by U.S.I.

Flavin Concentrate Developed by U.S.I. Has High Vitamin Value

Excellent Potentialities Indicated for Curbay B-G in Formulation of Mixed Feeds

A riboflavin carrier containing large amounts of the essential nutritive factors riboflavin and pantothenic acid has been announced by U.S.I. recently.

Known as Curbay B-G, the new concentrate is the outgrowth of several years' research to develop a uniform, economical source of these vital factors. Curbay B-G, because of its high vitamin content and other nutritive ingredients, offers exceptional opportunities for the scientific formulation of low-cost mixed feeds for poultry, and in other instances where riboflavin and pantothenic acid supplements are indicated.

Tests Show High Value

Feed mixers and poultry raisers have long been aware of the importance of an adequate vitamin content in diet. The efficacy with which concentrates can be used to supply this content naturally depends on the establishment of satisfactory testing and control methods for the production of the concentrate itself.

In developing and testing Curbay B-G, U.S.I.'s research staff has made extensive use

(*Continued on next page*)

CURBAY B-G
General Analysis

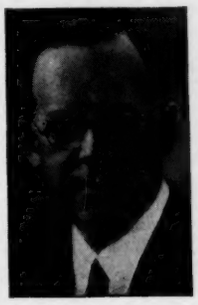
Protein	12.5%
Nitrogen-free extract	56.0%
Fiber	Not more than 1.0%
Fat	Trace
Ash	Not more than 27.0%

Mineral Analysis
(As % of Total Weight)

Silica (SiO_2)	0.59%
Iron Oxide (Fe_2O_3)	0.16%
Calcium Oxide (CaO)	4.00%
Magnesium Oxide (MgO)	1.50%
Sodium Oxide (Na_2O)	2.46%
Potassium Oxide (K_2O)	8.74%
Sulphuric Anhydride (SO_3)	4.47%
Phosphoric Anhydride (P_2O_5)	0.44%
Chlorine	0.83%
Manganese	0.006%
Aluminum Oxide (Al_2O_3)	0.70%

Dr. Fisher New President Of Institute of Chemists

NEW YORK, N. Y.—Dr. Harry L. Fisher, of U. S. Industrial Chemicals, Inc., has been elected president of the American Institute of Chemists, it was announced here.



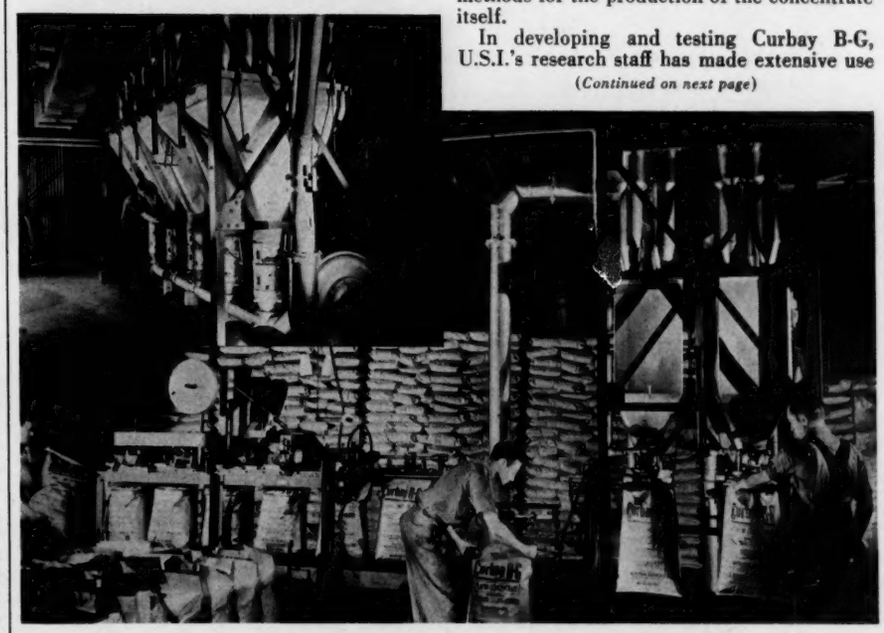
Dr. Fisher, who makes his headquarters at the company's laboratories in Stamford, Conn., is well known for his achievements in the field of rubber chemistry and technology, and is an authority on non-sulphur vulcanization of rubber. He recently received a Modern Pioneer award.

Phthalates in Vacuum Pumps

SCHENECTADY, N. Y.—Diamyl and dibutyl phthalates are being successfully used in the vacuum pumps for high-voltage X-ray tubes, it has been learned.

The phthalates, it is said, are more satisfactory than apiezon oils formerly used.

Diamyl Phthalate and Dibutyl Phthalate are produced by U.S.I.



Upper left: Spray drying in the manufacture of Curbay B-G eliminates the need for high temperatures, which might have a harmful effect. Lower: The finished product is packed in three-ply bags that prevent access of moisture, and allow the material to be stored for periods up to six months.

ADVERTISEMENT—*This entire page is a paid advertisement.*

July ★ **U.S.I. CHEMICAL NEWS** ★ 1940

Refines Tall Oil by Use Of Two Types of Alcohol

NEWARK, N. J.—Both the fatty acids and the resin acids in tall oil can be recovered in substantially pure form by esterifying them with two different types of alcohol, it is claimed in a patent granted to an inventor here.

The fatty acids are esterified by an alcohol such as ethyl, methyl, butyl, or isopropyl, and the resin acids are esterified with polyhydric alcohols, it is reported.

Ethyl and Butyl Alcohol are produced by U.S.I. Isopropyl Alcohol is sold by U.S.I.

Curbay B-G for Feeds

(Continued from previous page)

of the recently developed Snell-Strong method of assaying vitamin content by means of lactic acid organisms. This method is rapid, amazingly sensitive, and accurate in its results.

Curbay B-G contains at least twice as much riboflavin as good dried skim milk powder. Pantothenic acid (filtrate factor) content, assayed by a modification of the Snell-Strong method, has been found to be at least four times that of milk powder.

Manufacturing Process

The nutritive factors in Curbay B-G are a natural outcome of U.S.I.'s fermentation processes. The cane molasses used as a raw material is rich in pantothenic acid and iron, while the fermentation process yields large quantities of riboflavin and builds up a large yeast population.

U.S.I.'s method of developing the fermentation residues results in a uniform product which retains the nutritional values. The residue is concentrated in vacuum evaporators, and the resulting syrup is spray dried. This method eliminates the use of high temperatures, which would have an adverse effect on the nutritional values. The final product, a light brown powder, is packed in moisture-proof paper bags that keep it in perfect condition for long periods.

Experience with Curbay B-G in laboratory and field indicates that it may be used with complete success in quantities up to 3%. It is usually desirable to have Curbay B-G replace a substantial portion of the milk. The protein so displaced may be made up by protein from meat scrap, soybean meal, etc.

Actual field tests using Curbay B-G have shown normal or improved weight gain of chicks, and savings in cost of feed per unit of gain.

U.S.I. will gladly give further information on the use of Curbay B-G.

Textiles Waterproofed by Process Using New Lacquer

COLUMBUS, Ohio—Silk and other textiles can be waterproofed by the use of a new lacquer, over which mica, pigment, or a cellulose floc is applied, according to a patent granted to two inventors here.

A typical lacquer, it is said, has the following proportions by weight:

Nitrocellulose	12.5
Maleic acid	17.5
Methyl ricinoleate	15.0
Toluol	5.0
Ethyl acetate	22.5
Alcohol	15.0
Petroleum thinner	12.5

Ethyl Acetate and Alcohol are produced by U.S.I.

Data on screen, sub-screen, and submicroscopic measurements are contained in a bulletin prepared by U.S.I. Relative measurements of proton, electron, cosmic ray, X-rays, light waves, and colloidal particles are among the data included. Ask for a copy of Bulletin SM.

Acetone Is Blending Agent In Metal-Cleaning Liquid

DETROIT, Mich.—How a new composition for cleaning metal preparatory to painting can be prepared with the aid of acetone and sodium secondary alcohol sulphates is revealed in a patent granted to an inventor here.

The acetone, it is said, serves as a blending agent to keep the sodium secondary sulphates from being thrown out of solution when the composition is concentrated for shipment.

Acetone is produced by U.S.I.

Safety Lantern Developed For Explosive Atmospheres

FREEPORT, Ill.—A new lantern that is said to be suitable for use in paint factories, mines, chemical plants, and other locations where explosive atmospheres may be encountered, has been placed on the market by a manufacturer here.

Lantern is approved by the Bureau of Mines and the Underwriters' Laboratories, according to the manufacturer. It is said that a unique feature is the twin-bulb socket that permits easy replacement of burned-out bulbs.

TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

A new cleaner for automobile finishes is said to clean, polish, and protect in a single operation. Maker says that it removes dirt effectively, gives a brilliant dry luster, and protects with an invisible glaze. **(No. 350)**

U S I

New baking finishes are reported to have exceptionally high resistance to attack by acids, alkalis, oils, and organic solvents. They are said to have high wear resistance, and to have been successfully used in rayon and textile machinery, processing equipment, and dyeing machinery. **(No. 351)**

U S I

A safety glass shield is said to provide a means of protecting the laboratory worker from injury by accidental explosions. The glass used is reported to be highly resistant to shock. **(No. 352)**

U S I

A new adhesive is described as light-colored, resistant to dilute acids, alkalis, water, grease, oils, and embrittlement on aging. It is said to be suitable for laboratory and shop use. **(No. 353)**

U S I

White shellac in stick form is said to be suitable for repairing imperfections in white enamel and other white surfaces. Application is by hot knife, it is reported. **(No. 354)**

U S I

A flowmeter is reported to be particularly adapted to the measurement of fluids beyond the scope of the orifice type of meter. Fuel oils, ammonia, and hot tar are among the suggested applications. Measurement can be transmitted electrically to remote points. **(No. 355)**

U S I

Removable rubber linings are said to be available for use in stationary or portable tanks and containers. They are made to specification, are described as suitable for use with acids, alkalis, salt solutions. **(No. 356)**

U S I

An oil-proof floor mat is said to provide a non-skid surface in locations where resistance to oil attack is needed. **(No. 357)**

U S I

Faster filtering is claimed for new funnels with a bowl angle of 58° instead of the usual 60°. According to the maker, filter paper folded at the regular angle seals around the rim, and the conical space between funnel and paper creates a better natural suction. **(No. 358)**

U S I

A hot stamping machine for marking plastic parts can be used for trademarks or other identification, it is claimed. It is said that the machine is easily operated and weighs only 14 pounds. **(No. 359)**

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Butyl Acetate
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Dibutyl Phthalate
Diethyl Phthalate
Dimethyl Phthalate

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Butyl Propionate
Dibutyl Oxalate

INTERMEDIATES
Acetoacetanilid
Acetoacet-o-chloranilid
Acetoacet-o-toluidid
Ethyl Acetoacetate
Sodium Ethyl Oxalacetate

ETHERS
Ethyl Ether
Ethyl Ether Absolute—A.C.S.

OTHER PRODUCTS
Acetone, C.P.
Collodions
*Curbay Binders
*Curbay X (Powder)
Derex
Ethylene
Methyl Acetone
Nitrocellulose Solutions
Potash, Agricultural
*Vacatone
*Curbay B-G

Personalities in Chemistry

By Adam C. Fadyen.

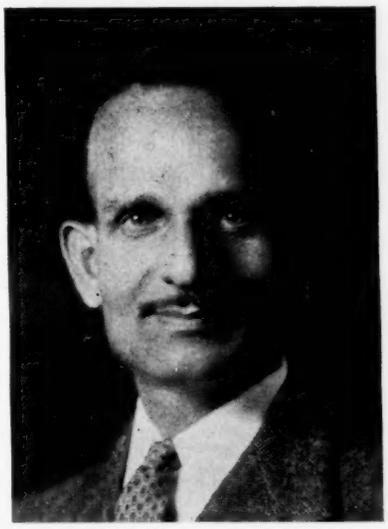
SOMEONE has said that the Universal Oil Products Company was endowed with clairvoyance back in 1921 in selecting Dr. Jacque C. Morrell as their associate director of research, which position he has held for the past nineteen years. Upon studying the two hundred and seventy-five inventions made by Morrell, and their value to the petroleum industry, one might ascribe the power of clairvoyance to Morrell also.

The Morrell patents include the basic sulfuric acid alkylation process for producing iso-octane motor fuel; refining processes; improvements in processes of cracking petroleum to produce motor fuels and of treating the cracked products; polymerization of hydrocarbon gases to produce high octane motor fuels; production of butadiene, now used in the manufacture of synthetic rubber; aromatic hydrocarbons from aliphatic petroleum hydrocarbons for production of explosives, dyes, perfumes, plastics and medicinals; production of decolorizing and gas adsorptive activated carbons from non-strategic materials, such as coal and wood, and processes for making asphalt emulsions. He has on occasion varied the fields by other inventions, one group of which is prefabricated houses. In recognition of his contributions to invention and industry he was selected as one of twenty inventors to represent all contemporary inventors at the Patent Contennial in 1936, and was given the Modern Pioneer award in 1940.

Morrell Alkylation Process

The Morrell method for sulfuric acid alkylation of hydrocarbons, patented in 1939, shows promise of becoming the leading process for the production of iso-octane aviation fuel. In the Morrell alkylation process the iso-butane and butenes in the cracked gas, or derived from natural gas, are converted directly into iso-octane fuel. This fuel has approximately 95-octane value in power output and fuel saving, and is now regarded as indispensable to aviation. It is estimated that plants already in operation produce approximately 10,000,000 barrels of iso-octane fuel yearly by the process of the Morrell patent.

Dr. Morrell has made important contributions in the art of selective treatment of cracked gasoline, whereby an overhead fraction is given a relatively light treatment; for example a caustic wash or the addition of an inhibitor, and the heavier fractions are given a relatively more extensive treatment. These processes permit the removal from the motor fuel of objectionable substances such as gum, color, odor and corrosives. More than 75,000,000 barrels of gasoline are treated yearly by these processes.



Jacque C. Morrell

The dehydrogenation, dehydrocyclization and butadiene processes in which Morrell is co-inventor involve the use of catalysts for the conversion of hydrocarbons, including normally liquid fractions from petroleum and natural and cracked gases, into products of great commercial value, ranging from high anti-knock motor fuel to pure aromatic hydrocarbons, such as toluene for T.N.T., and benzene for the production of synthetic resins, pharmaceuticals, etc. The importance of producing T.N.T. from petroleum hydrocarbons is evident when one considers that only about 400,000,000 pounds can be produced annually from the toluene obtained from coal tar, whereas it is estimated that in excess of 40,000,000,000 pounds, in addition to other types of military explosives, can be produced annually from petroleum hydrocarbons.

The butadiene and isoprene processes, invented by Morrell in collaboration with Dr. A. V. Grosse, make available the vast amounts of butanes and butenes in natural and cracked gases for the production of butadiene by a simple catalytic process, which in turn may be converted into synthetic rubber by simple polymerization or copolymerization with styrene. Styrene in turn may be obtained from petroleum distillates by the "cyclization" process already mentioned. Dr. Morrell is of the opinion that the United States can thus produce about two hundred times its requirements of natural rubber.

Jacque C. Morrell was born in Savannah, Ga., in 1893. A working experience of several years that included farm, shop and office, during which time he was attending evening school, delayed his matriculation at Columbia University until he had reached his 20th birthday. After six months at Columbia, Alexander Smith, then head of the department of chemistry, appointed Morrell as lecture assistant and demonstrator.

Enlisted in Army

Then came the World War. Morrell enlisted in the army and was assigned to Fort Slocum in New York harbor. A couple of months later he was ordered to report to the Chemical Warfare Service in Washington, where he was assigned the job of producing from non-strategic materials a synthetic activated charcoal suitable for gas masks. A letter of commendation from the Chief of the Division stated: "In spite of working single-handed and under unfavorable circumstances, you succeeded in producing a raw charcoal which is better than any charcoal previously made." Morrell is now Lt. Colonel in the Reserve Corps of the U. S. Army, and is a consultant in chemical warfare to the War Department.

After the War Morrell returned to Columbia to resume his work as instructor in the Dept. of Chemistry and in the School of Journalism and to complete the research work for the doctorate degree. The spirit of the teacher desiring to share his knowledge with others has inspired Morrell to pen over 200 scientific and technical articles. Likewise this spirit prompted him to serve six terms as president of the Board of Education of his adopted city. He has also served as president and trustee of the Chicago Section and councillor and chairman of the Petroleum Division of the American Chemical Society. He is at present a visiting professor of Armour Institute, and has appeared as special lecturer before many societies.

GLACIAL ACETIC ACID

Standard Glacial Acetic Acid, 99.5% minimum

An exceptionally fine water-white acid, free from metals, higher acids, and objectionable empyreumatic substances.

Laundry Special Glacial Acetic Acid

A special acid for use as a laundry sour which leaves the finished clothes with a pleasant, agreeable odor. In addition there is no rolling on flat work and no bleaching action on colored goods.

U.S.P. XI Glacial Acetic Acid, 99.5% minimum

This acid exceeds all U.S.P. requirements and is ideal for all pharmaceutical and edible purposes. As described in the next column, glass carboys have been replaced by metal containers.

C.P. Glacial Acetic Acid, 99.8% minimum

This C.P. grade meets all A.C.S. Reagent specifications. Special cases and drums have been developed to eliminate the use of glass carboys.

Containers

Cases—Returnable—Two 6-gallon cans in a wooden box. Aluminum for Standard Glacial, stainless steel for U.S.P. and C.P. Glacial; 100 pounds net.

Drums—Returnable—110-gallon aluminum for Standard Glacial, 900 pounds net. Stainless steel for U.S.P. and C.P. Glacial, 450 pounds net.

Barrels—Non-returnable—For export of Standard Glacial, 420 pounds net.

Carboys—Non-returnable—For export of Standard, U.S.P. or C.P. acid, 44 pounds net.

NIACET

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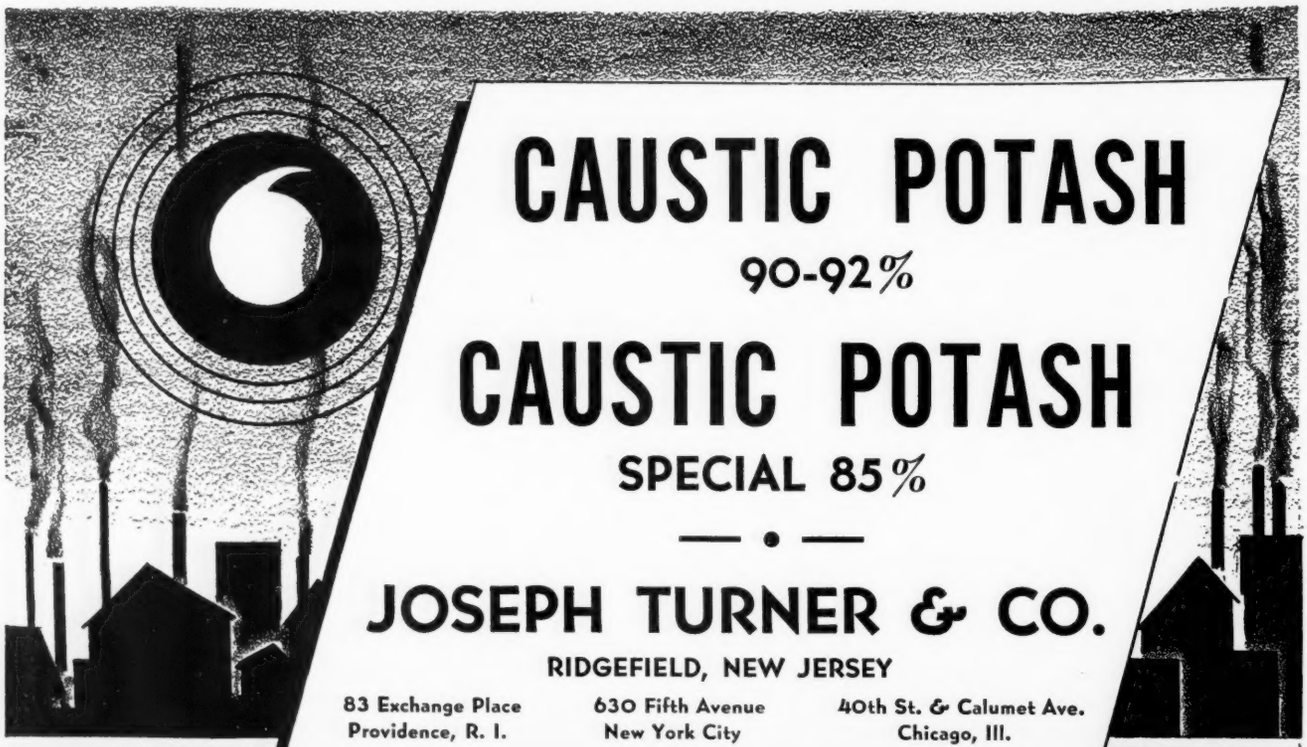

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Chemicals for Industry

PRICES CURRENT

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f.o.b. works are specified as such. Import chemicals are so designated.

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f.o.b., or ex-dock. Materials sold f.o.b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both.

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1939 Average $1.24 - Jan. 1940 $1.17 - June 1940 $1.21

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Acetaldehyde, drs, c-l, wks lb.	...	.11	...	.11	.10	.14
Acetaldol, 95%, 55 gal drs wks lb.	.11	.12	.11	.25	.21	.25
Acetamide, tech, lcl, kgs lb.	.28	.30	.28	.50	.28	.50
Acetanilid, tech, 150 lb bbls lb.	...	.22	...	.22	.22	.29
Acetic Anhydride, drs, f.o.b. wks, frt all'd ... lb.	.10½	.11½	.10½	.11½	.10½	.11
Acetin, tech, drs ... lb.	...	.33	...	.33	...	.33
Acetone, tks, f.o.b. wks, frt all'd ... lb.	...	.06	.05¾	.06	.04¼	.06
drs, c-l, f.o.b. wks, frt all'd' lb.	...	.07½	.07¼	.07½	.05¾	.07¼
Acetyl chloride, 100 lb cbys lb.	.55	.68	.55	.68	.55	.68
Abietic, kgs, bbls ... lb.	.08¾	.09	.08¾	.09	.08¾	.09
Acetic, 28%, 400 lb bbls, c-l, wks ... 100 lbs.	...	2.23	...	2.23	...	2.23
glacial, bbls, c-l, wks 100 lbs.	...	7.62	...	7.62	...	7.62
glacial, USP bbls, c-l, wks, ... 100 lbs.	...	10.25	...	10.25	...	10.25
Acetic Acid Glacial, *Synthetic* 99.5%, cbys, cases, delv lb.	...	.0918	...	...	...	...
99.5%, 110-gal dr, delv lb.	...	.0868	...	...	...	...
USP XI, cases, cbys, delv ... lb.	...	.11	...	...	...	...
USP XI, 110-gal drs, delv ... lb.	.10¼	.10½	...	...	...	...
CP, cases, cbys, delv ... lb.	...	.14	...	...	...	...
CP, 55-gal drs, delv ... lb.	.13¼	.13½	...	...	...	...
Acetylsalicylic, USP, 225 lb bbls ... lb.	...	.40	...	.40	.40	.50
Adipic, kgs, bbls ... lb.	...	.31	.31	.72	...	.72
Anthranilic, ref'd, bbls. lb.	1.15	1.20	1.15	1.20	1.15	1.20
tech bbls ... lb.	...	.75	...	.75	...	.75
Ascorbic, bot ... oz.	2.25	2.50	2.25	3.00	2.75	3.25
Battery, cbys, wks ... 100 lbs.	1.60	2.55	1.60	2.55	1.60	2.55
Benzoic tech, 100 lb kgs lb.	.43	.47	.43	.47	.43	.47
USP, 100 lb kgs ... lb.	.54	.59	.54	.59	.54	.59
Boric, tech, gran, 80 tons, bgs, delv ... ton *a*	...	96.00	...	96.00	...	96.00
Broenner's, bbls ... lb.	...	1.11	...	1.11	...	1.11
Butyric, edible, c-l, wks, cbys lb.	1.20	1.30	1.20	1.30	1.20	1.30
synthetic, c-l, drs, wks .lb.	...	.22	...	.22	...	.22
wks, lcl ... lb.	...	.23	...	.23	...	.23
tks, wks ... lb.	...	.21	...	.21	...	.21
Camphoric, drs ... lb.	5.50	5.70	5.50	5.70	5.50	5.70
Caproic, normal, drs ... lb.	.35	.40	.35	.40	...	.35
Chicago, bbls ... lb.	...	2.10	...	2.10	...	2.10
Chlorosulfonic, 1500 lb drs, wks ... lb.	.03½	.05	.03½	.05	.03½	.05
Chromic, 99¼%, drs, delv lb.	.15¼	.17¼	.15¼	.17¼	.15¼	.17¼
Citric, USP, crys, 230 lb bbls ... lb. *b*	.20	.21	.20	.21½	.20	.22½
anhyd, gran bbls ... lb *b*	...	.23	...	.23	.23	.25
Cleve's, 250 lb bbls ... lb.	...	.57	...	.57	...	.57
Cresylic, 99%, straw, HB, drs, wks, frt equal ..gal.	.68	.70	.68	.70	.49	.70
99%, straw, LB, drs, wks, frt equal ... gal.	.68	.75	.68	.75	.55	.75
resin grade, drs, wks, frt equal ... lb.	.08¾	.09¾	.08¾	.09¾	.08¾	.09¾
Crotonic, bbls, delv ... lb.	.21	.50	.21	.50	.21	.50
Formic, tech, 140 lb drs. lb.	.10½	.11½	.10½	.11½	.10½	.11½
Fumaric, bbls ... lb.	.24	.28	.24	.75	...	.75
Fuming, see Sulfuric (Oleum)						
Gallic, tech, bbls ... lb.	.90	.93	.75	.93	.70	.73
USP, bbls ... lb.	.92	.95	.92	.95	.77	.81
Gamma, 225 lb bbls, wks. lb.	...	.85	...	.85	...	.85
H, 225 lb bbls, wks ... lb.	...	.45	...	.45	.50	.55
Hydriodic, USP, 47% ... lb.	...	2.30	...	2.30	...	2.30
Hydrobromic, 34% conct 155 lb cbys, wks ... lb.	.42	.44	.42	.44	.42	.44
Hydrochloric, see muriatic						
Hydrofluoric, 30%, 400 lb bbls, wks ... lb.	.06	.06½	.06	.06½	.06	.07½
Hydrofluosilicic, 35%, 400 bbls, wks ... lb.	.09	.09¼	.09	.09½	.09	.09½
Lactic, 22%, dark, 500 lb bbls lb.	.02½	.03¼	.02½	.03¼	.02½	.02¾
22%, light ref'd, bbls. .lb.	.03½	.03¾	.03½	.03¾	.03½	.03¾
44%, light, 500 lb bbls. .lb.	.05½	.06¾	.05½	.06¾	.05½	.05¾
44%, dark, 500 lb bbls. .lb.	.06½	.07¾	.06½	.07¾	.06½	.06¾
50%, water white, 500 lb bbls ... lb.	.10½	.11½	.10½	.11½	.10½	.11½
Lauric, drs ... lb.	.13½	.14	.13½	.14½	.11¾	.12¼
Laurent's, 250 lb bbls ... lb.	...	.45	.45	.46	.45	.46
Maleic, powd, kgs ... lb.	...	.30	.30	.40	.30	.40
Malic, powd, kgs ... lb.	...	.47	...	.47	.45	.60
Mixed, tks, wks ... N unit	.05	.06	.05	.07¼	.06½	.07¼
S unit	.008	.009	.008	.009	.008	.009
Monochloracetic, tech, bbls lb.	.15	.18	.15	.18	.16	.18
Monosulfonic, bbls ... lb.	...	1.50	1.50	1.60	1.50	1.60

a Powdered boric acid $5 a ton higher in each case; USP $15 higher; *b* Powdered citric is ½c higher; kegs are in each case ½c higher than bbls.; *y* Price given is per gal.

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Muriatic, 18°, 120 lb cbys, c-l, wks ... 100 lb.	...	1.50	...	1.50	...	1.50
tks, wks ... 100 lb.	...	1.05	1.00	1.05	...	1.00
20°, cbys, c-l, wks. 100 lb.	...	1.75	...	1.75	...	1.75
tks, wks ... 100 lb.	...	1.15	1.10	1.15	...	1.10
22°, c-l, cbys, wks. 100 lb.	...	2.25	...	2.25	...	2.25
tks, wks ... 100 lb.	...	1.65	1.60	1.65	...	1.60
CP, cbys ... lb.	.06½	.08	.06½	.08	.06½	.07½
N & W, 250 lb bbls ... lb.	.85	.87	.85	.87	.85	.87
Naphthenic, 240-280 s.v., drs lb.	.10	nom.	nom.	.14	.10	.14
Naphthionic, tech, 250 lb bbls lb.	.60	.65	.60	.65	.60	.65
Nitric, 36°, 135 lb cbys, c-l, wks ... 100 lb. *c*	...	5.00	...	5.00	...	5.00
38°, c-l, cbys, wks 100 lb. *c*	...	5.50	...	5.50	...	5.50
40°, cbys, c-l, wks 100 lb. *c*	...	6.00	...	6.00	...	6.00
42°, c-l, cbys, wks 100 lb. *c*	...	6.50	...	6.50	...	6.50
CP, cbys, delv ... lb.	.11½	.13	.11½	.13	.11½	.12½
Oxalic, 300 lb bbls, wks, or N Y ... lb.	.10¾	.12	.10¾	.12	.10¾	.12
Phosphoric, 85%, USP, cbys lb.	...	.12	.12	.14	.12	.14
50%, acid, c-l, drs, wks. lb.	...	.12	.06	.12	.06	.08
75%, acid, c-l, drs, wks. lb.	...	.07½	...	.07½	...	.07½
Picramic, 300 lb bbls, wks lb.	.65	.70	.65	.70	.65	.70
Picric, kgs, wks ... lb.	...	.35	.35	.40	.35	.40
Propionic, 98% wks, drs. .lb.	...	.25	...	.25	...	.22
80% ... lb.	...	.20	...	.20	.16	.17½
Pyrogallic, tech, lump, pwd, bbls ... lb.	...	1.20	1.05	1.20	1.45	1.63
cryst, USP ... lb.	1.70	2.25	1.55	2.25	1.55	2.10
Ricinoleic, bbls ... lb.	.27	.33	.27	.33	...	.35
Salicylic, tech, 125 lb bbls, wks ... lb.	...	.33	...	.33	...	.33
USP, bbls ... lb.	.35	.40	.35	.40	.35	.40
Sebacic, tech, drs, wks ..lb.	no prices		no prices		...	...
Succinic, bbls ... lb.	...	.75	...	.75	...	.75
Sulfanilic, 250 lb bbls, wks lb.	...	.17	.17	.18	.17	.18
Sulfuric, 60°, tks, wks. .ton	...	13.00	...	13.00	...	13.00
c-l, cbys, wks ... 100 lb.	...	1.25	...	1.25	...	1.25
66°, tks, wks ... ton	...	16.50	...	16.50	...	16.50
c-l, cbys, wks ... 100 lb.	...	1:50	...	1.50	...	1.50
CP, cbys, wks ... lb.	.06½	.08	.06½	.08	.06½	.07½
Fuming (Oleum) 20% tks, wks ... ton	...	18.50	...	18.50	...	18.50
Tannic, tech, 300 lb bbls .lb.	.54	.56	.44	.56	.40	.47
Tartaric, USP, gran, powd, 300 lb bbls ... lb.	.41¼	.42¼	.35¼	.42¼	.27½	.31¼
Tobias, 250 lb bbls ... lb.	.55	.60	.55	.60	.55	.67
Trichloroacetic bottles ... lb.	2.00	2.50	2.00	2.50	2.00	2.50
kgs ... lb.	..	1.75	...	1.75	...	1.75
Tungstic, tech, bbls ... lb.	no prices		no prices		1.70	1.80
Vanadic, drs, wks ... lb.	no prices		no prices		1.10	1.20
Albumen, light flake, 225 lb. bbls ... lb.	.55	.62	.55	.62	.52	.68
dark, bbls ... lb.	.13	.18	.13	.18	.13	.18
egg, edible ... lb.	.54	.60	.53	.62	.58	.78
Alcohol, Amyl (from Pentane) tks, delv ... lb.	...	.101	...	.101	...	.101
c-l, drs, delv ... lb.	...	.111	...	.111	...	.111
lcl, drs, delv ... lb.	...	.121	...	.121	...	.121
Amyl, normal 1-c-l drs	...	.08½	...	.08½	...	.08½
Wyandotte, Mich. ... lb.	...	.25	...	...	...	...
secondary, tks, delv ... lb.						
drs, c-l., delv E of Rockies ... lb.	...	.09½	...	09½	...	.09½
Benzyl, cans ... lb.	...	.68	.68	1.00	.68	1.00
Butyl, normal, tks, f.o.b. wks, frt all'd ... lb. *d*	...	.09	...	.09	.07	.09
c-l, drs, f.o.b. wks, frt all'd ... lb. *d*	...	.10	...	.10	.08	.10
Butyl, secondary, tks, delv ... lb. *d*	...	.06½	...	.06½	.05½	.06½
c-l, drs, delv ... lb. *d*	...	.07½	...	.07½	.06½	.07½
Capryl, drs, tech, wks. ..lb.	...	.85	...	.85	...	.85
Cinnamic, bottles ... lb.	2.00	2.50	2.00	2.50	2.00	2.50
Denatured, CD, 14, c-l drs, wks ... gal. *e*	.31½	.36½	.31½	.36½	.27½	.36½
tks, East, wks ... gal.	...	.25½	...	.25½	.21½	.25½
Western schedule, c-l, drs, wks ... gal. *e*	...	.36½	.34½	.36½	.34½	.37
c-l, drs, wks ... gal. *e*	...	.26½	.21½	.26½	.19½	.22
Denatured, SD, No. 1, tks,	...	.22½	...	.22½	.25½	28½
Diacetone, pure, c-l, drs, delv ... lb. *f*	...	.12	...	.12	.09	.12
tech, contract, drs, c-l, delv ... lb.	...	.11½	...	.11½	.08½	.11½

c Yellow grades 25c per 100 lbs. less in each case; *d* Spot prices are 1c higher; *e* Anhydrous is 5c higher in each case; *f* Pure prices are 1c higher in each case.

ABBREVIATIONS—Anhydrous, anhyd; bags, bgs; barrels, bbls; carboys, cbys; carlots, c-l; less-than-carlots, lcl; drums, drs; kegs, kgs; powdered, powd; refined, ref'd; tanks, tks; works, f.o.b., wks.

		Current Market	1940 Low	1940 High	1939 Low	1939 High
Alcohols (continued):						
Ethyl, 190 proof, molasses, tks	gal. *g*	4.48		4.48	4.46	4.48½
c-l, drs	gal. *g*	4.54		4.54	4.49	4.54½
c-l, bbls	gal. *g*	4.55		4.55	4.53	4.55½
Furfuryl, tech, 500 lb drs	lb.	.35	.25	.35	.25	.35
Hexyl, secondary tks, delv	lb.	.12		.12		.12
c-l, drs, delv	lb.	.13		.13		.13
Normal, drs, wks	lb.	3.25 3.50	3.25	3.50	3.25	3.50
Isoamyl, prim, cans, wks	lb.	.32		.32		.32
drs, lcl, delv	lb.	.27		.27		.27
Isobutyl, ref'd, lcl, drs	lb.	.073		.073	.073	.09
c-l, drs	lb.	.069		.069	.068	.08½
tks	lb.	.059		.059		.07½
Isopropyl, refd, 91%, c-l, drs, f.o.b. wks, frt all'd	lb.	.65		.65		.36
Ref'd 98%, drs, f.o.b. wks, frt all'd	gal.	.65		.65		.41
Tech 91% drs, above terms	gal.	.33½		.33½		.33½
tks, same terms	gal.	.28½		.28½		.28½
Tech 98%, drs, above terms	gal.	.36	.36	.37½		.37½
tks, above terms	gal.	.31	.31	.32½		.32½
Spec. Solvent, tks, wks	gal.	.23½		.23½	.19	.23½
Aldehyde ammonia, 100 gal drs	lb.	.80 .82	.80	.82	.80	.82
Aldehyde Bisulfite, bbls, delv	lb.	.17		.17		.17
Aldol, 95%, 55 and 110 gal, drs, delv	lb.	.11 .12	.11	.12	.11	.20
Alphanaphthol, crude, 300 lb bbls	lb.	.52		.52		.52
Alphanaphthylamine, 350 lb bbls	lb.	.32	.32	.34	.32	.34
Alum, ammonia, lump, c-l, bbls, wks	100 lb.	3.75		3.75	3.40	3.75
delv NY, Phila	100 lb.	3.75		3.75	3.40	3.75
Granular, c-l, bbls wks	100 lb.	3.50		3.50	3.15	3.50
Powd, c-l, bbls, wks	100 lb.	3.90		3.90	3.55	3.90
Chrome, bbls	100 lb.	no prices		6.50	6.75	6.50 6.75
Potash, lump, c-l, bbls, wks	100 lbs.	4.00		4.00	3.65	4.00
Granular, c-l, bbls, wks	100 lb.	3.75		3.75	3.40	3.75
Powd, c-l, bbls, wks	100 lb.	4.15		4.15	3.80	4.15
Soda, bbls, wks	100 lb.	3.25		3.25		3.25
Aluminum metal, c-l, NY	100 lb.	19.00	19.00	20.00		20.00
Acetate, 20%, bbls	lb.	.08 .09	.07½	.09	.07½	.09
Basic powd, bbls, delv	lb.	.35 .50	.35	.50	.40	.50
32% basic, bbls, delv	lb.	.09½ .12				
Insoluble basic powder, bbls, delv	lb.	.40				
Soluble normal pwdr	lb.	.22				
Soluble basic powder	lb.	.33				
Chloride anhyd, 99% wks	lb.	.08 .12	.08	.12	.06	.12
93%, wks	lb.	.05 .08	.05	.08	.05	.08
Crystals, c-l, drs, wks	lb.	.06 .06½	.06	.06½	.06	.06¼
Solution, drs, wks	lb.	.02¾ .03¼	.02¾	.03¼	.02¾	.03¼
Formate, 30% sol bbls, c-l, delv	lb.	.13		.13		.13
Hydrate, 96%, light, 90 lb bbls, delv	lb.	.12½ .13	.12½	.13½	.11½	.13
heavy, bbls, wks	lb.	.029 .03½	.029	.03½	.029	.03½
Oleate, drs	lb.	.17½ .20	.16¾	.20	.16¾	.18½
Palmitate, bbls	lb.	.20½ .21½	.20½	.24½	.23	.24½
Resinate, pp., bbls	lb.	.15		.15		.15
Stearate, 100 lb bbls	lb.	.19 .20	.19	.20	.16	.22½
Sulfate, com, c-l, bgs, wks	100 lb.	1.15		1.15		1.15
c-l, bbls, wks	100 lb.	1.35		1.35		1.35
Sulfate, iron-free, c-l, bags, wks	100 lb.	1.60	1.60	1.80		1.45
c-l, bbls, wks	100 lb.	1.80	1.65	1.80		1.65
Aminoazobenzene, 110 lb kgs	lb.	1.15		1.15		1.15
Ammonia anhyd fert com, tks	lb.	.04½ .05½	.04½	.05½	.04½	.05½
Ammonia anhyd, 100 lb cyl	lb.	.16		.16		.16
50 lb cyl	lb.	.22		.22		.22
26°, 800 lb drs, delv	lb.	.02¼ .02½	.02¼	.02½	.02¼	.02½
Aqua 26°, tks, NH	cont.	.05¼z	.04	.05¼		.04z
Ammonium Acetate, kgs	lb.	.27 .33	.27	.33	.26	.33
Bicarbonate, bbls, f.o.b. wks	100 lb.	5.56		5.56	5.15	5.71
Bifluoride, 300 lb bbls	lb.	.14½ .16½	.14½	.16½	.14½	.16½
Carbonate, tech, 500 lb bbls	lb.	.08 .11	.08	.11	.08	.12
Chloride, White, 100 lb bbls, wks	100 lb.	4.45		4.45	4.90	4.45 4.90
Gray, 250 lb. bbls, wks	100 lb.	5.50 5.75	5.50	6.25	5.50	6.25
Lump, 500 lb cks spot	lb.	.10½ .11	.10½	.11	.10½	.11
Lactate, 500 lb bbls	lb.	.15 .16	.15	.16	.15	.16
Laurate, bbls	lb.	.23		.23		.23
Linoleate, 80% anhyd, bbls	lb.	.12		.12	.11	.15
Naphthenate, bbls	lb	.17		.17		.17
Nitrate, tech, bbls	lb.	.0455		.0455	.036	.0455
Oleate, drs	lb.	.14		.14	.11	.14
Oxalate, neut, cryst, powd, bbls	lb.	.19 .20	.19	.20	.19	.20
Perchlorate, kgs	lb.	.17 .19	.17	.19		.16
Persulfate, 112 lb kgs	lb.	.21 .22	.21	.22	.21	.24
Phosphate, diabasic tech, powd, 325 lb bbls	lb.	.07½ .10	.07½	.10	.07½	.10
Ricinoleate, bbls	lb.	.15		.15		.15
Stearate, anhyd, bbls	lb.	.24½		.24½	.22	.24½
Paste, bbls	lb.	.06½		.06½	.06½	.08

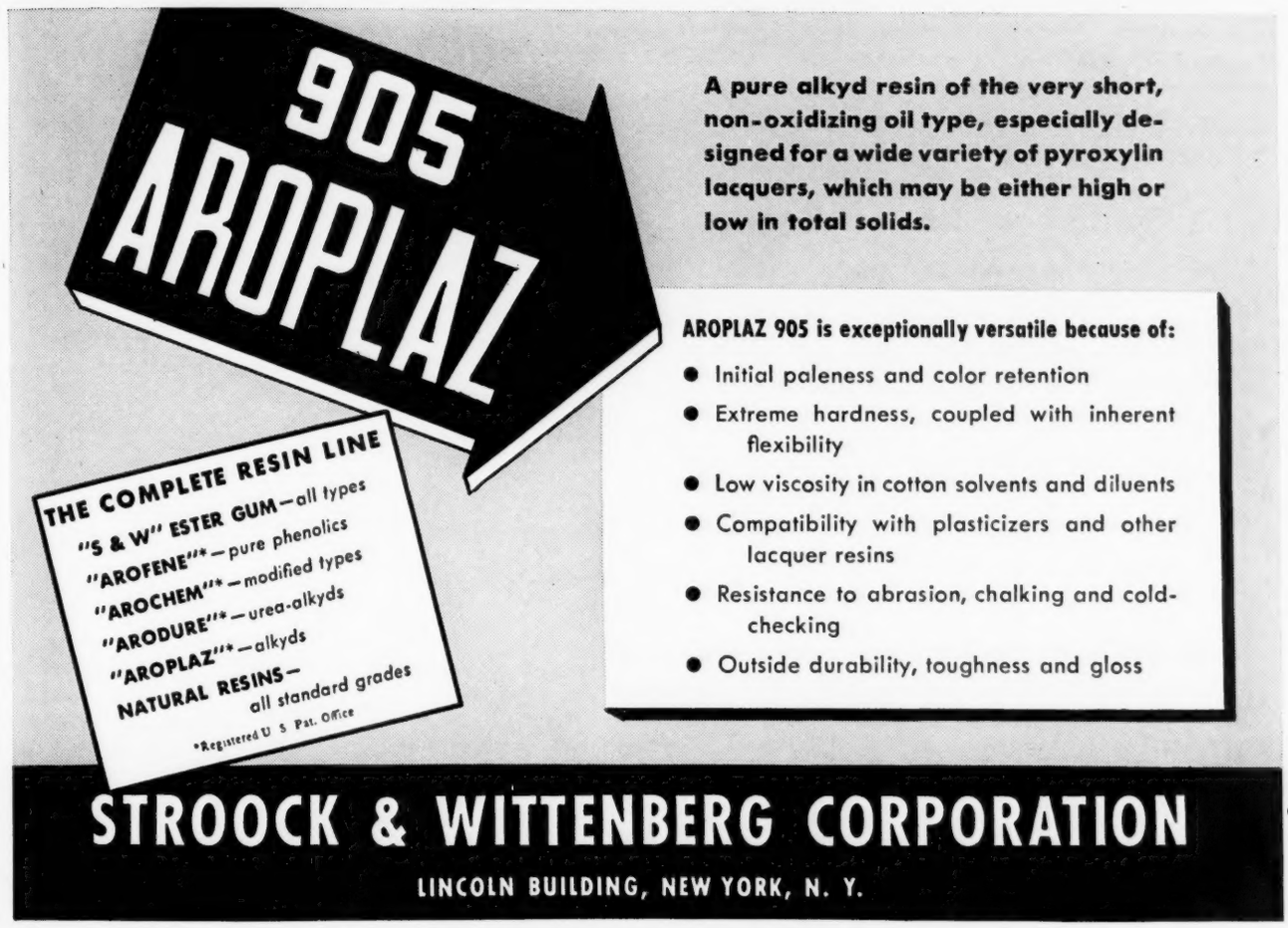
		Current Market	1940 Low	1940 High	1939 Low	1939 High
Ammonium (continued):						
Sulfate, dom, f.o.b., bulk	ton	28.00		28.00	27.00	28.00
Sulfocyanide, pure, kgs	lb.	.65		.65	.55	.65
Amyl Acetate (from pentane)						
tks, delv	lb.	.095		.095	.095	.10
c-l, drs, delv	lb.	.105		.105	.105	.11
lcl, drs, delv	lb.	.115		.115	.115	.112
tech drs, delv	lb.	.12½		.12½	.10½	.12½
Secondary, tks, delv	lb.	.08½		.08½		.08½
c-l, drs, delv	lb.	.09½		.09½		.09½
tks, delv	lb.	.08½		.08½		.08½
Chloride, norm, drs, wks	lb.	.56 .68	.56	.68	.56	.68
mixed, drs, wks	lb.	.0565 .0665	.0565	.0665	.0565	.077
tks, wks	lb.	.0465		.0465	.0465	.06
Mercaptan, drs, wks	lb.	1.10		1.10		1.10
Oleate, lcl, wks, drs	lb.	.25		.25		.25
Stearate, lcl, wks, drs	lb.	.26		.26		.26
Amylene, drs, wks	lb.	.102 .11	.102	.11	.102	.11
tks, wks	lb.	.09		.09		.09
Aniline Oil, 960 lb drs and tks	lb.	.14½		.14½	.14½	.17½
Annatto fine	lb.	.34 .39	.34	.39	.34	.39
Anthracene, 80%	lb.	.55		.55	.55	.75
Anthraquinone, sublimed, 125 lb bbls	lb.	.65		.65		.65
Antimony metal slabs, ton lots	lb.	.14		.14	.11¼	.14
Butter of, see Chloride.						
Chloride, soln, cbys	lb.	.17		.17		.17
Needle, powd, bbls	lb.	nom. .18		.18	.12	.20
Oxide, 500 lb bbls	lb.	.13 .14	.13	.15¾	.10	.15¾
Salt, 63% to 65%, tins	lb.	.30	.42	nom.	.25¾	.42
Archil, conc, 600 lb bbls	lb.	no prices		no prices	.21	.27
Double, 600 lb bbls	lb.	no prices		no prices	.18	.20
Aroclors, wks	lb.	.18 .30	.18	.30	.18	.30
Arrowroot, bbls	lb.	.09 .09½	.09	.10	.08½	.09
Arsenic, Metal	lb.				.40	.60
Red, 224 lb cs kgs	lb.	no prices		.17½	.18	.19
White, 112 lb kgs	lb.	.03¼ .04	.03	.03¾	.03	.03¾

B

Barium Carbonate precip, 200 lb bgs, wks	ton	52.50 55.00	52.50	62.50	52.50	62.50
Nat (witherite) 90% gr, c-l, wks, bgs	ton	45.00 47.00	45.00	47.00	41.00	47.00
Chlorate, 112 lb kgs, NY	lb.	nom. .25	.20	.25	.16½	.25
Chloride, 600 lb bbls, delv, zone 1	ton	77.00 92.00	77.00	92.00	77.00	92.00
Dioxide, 88%, 690 lb drs	lb.	.10	.10	.12	.11	.12
Hydrate, 500 lb bbls	lb.	.06½ .07	.06½	.07	.04½	.05½
Nitrate, bbls	lb.	.08½ .09½	.09½	.10½	.06¾	.10½
Barytes, floated, 350 lb bbls c-l, wks	ton	25.15		25.15		23.65
Bauxite, bulk, mines	ton	7.00 10.00	7.00	10.00	7.00	10.00
Bentonite, c-l, 325 mesh, bgs, wks	ton	16.00		16.00		16.00
200 mesh	ton	11.00		11.00		11.00
Benzaldehyde, tech, 945 lb drs, wks	lb.	.55 .60	.55	.60	.60	.62
Benzene (Benzol), 90%, Ind. 8000 gal tks, ft all'd	gal.	.16		.16		.16
90% c-l, drs	gal.	.21		.21		.21
Ind pure, tks, frt all'd	gal.	.16		.16		.16
Benzidine Base, dry, 250 lb bbls	lb.	.70		.70	.70	.72
Benzoyl Chloride, 500 lb drs	lb.	.23 .28	.23	.28	.40	.45
Benzyl Chloride, 95-97% rfd, drs	lb.	.19 .21	.19	.21	.30	.40
Beta-Naphthol, 250 lb bbls, wks	lb.	.23 .24	.23	.24	.23	.24
Naphthylamine, sublimed, 200 lb bbls	lb.	1.25 1.35	1.25	1.35	1.25	1.35
Tech, 200 lb bbls	lb.	.51 .52	.51	.52	.51	.52
Bismuth metal	lb.	1.25		1.25	1.05	1.25
Chloride, boxes	lb.	3.20 3.25	3.20	3.25	3.20	3.25
Hydroxide, boxes	lb.	3.35 3.46	3.35	3.46	3.15	3.40
Oxychloride, boxes	lb.	3.10		3.10	2.95	3.10
Subbenzoate, boxes	lb.	3.36	3.25	3.36	3.25	3.30
Subcarbonate, kgs	lb.	1.73 1.76	1.73	1.76	1.43	1.76
Trioxide, powd, boxes	lb.	3.56	3.56	3.57		3.57
Subnitrate, fibre, drs	lb.	1.48 1.51	1.48	1.51	1.23	1.51
Blanc Fixe, 400 lb bbls, wks	ton *h*	35.00 42.50	50.00	80.00	40.00	80.00
Beaching Powder, 800 lb drs, c-l, wks, contract 100 lb		2.00		2.00		2.00
lcl, drs, wks	lb.	2.25 3.35	2.25	3.35	2.25	3.60
Blood, dried, f.o.b., NY	unit	2.35	2.35	3.35	2.50	4.25
Chicago, high grade	unit	2.00	2.00	3.50	2.30	4.25
Imported shipt	unit	2.25	2.25	3.30	2.65	3.90
Blues, Bronze Chinese Prussian Soluble	lb.	.36 .37	.33	.37	.33	.37
Milori, bbls	lb.	.33 .34	.33	.34	.33	.37
Ultramarine,* dry, wks, bbls	lb.	.11		.11		.11
Regular grade, group 1	lb.	.16		.16		.16
Special, group 1	lb.	.19		.19		.19
Pulp, No. 1	lb.	.22 .27	.22	.27		.27
Bone, 4½ + 50% raw, Chicago	ton	30.00	30.00	33.00	27.00	35.00
Bone Ash, 100 lb kgs	lb.	.06 .07	.06	.07	.06	.07
Meal, 3% & 50%, imp	ton	32.50	32.00	32.50	22.00	32.00
Domestic, bgs, Chicago	ton	30.00	30.00	32.00	24.00	32.00
Borax, tech, gran, 80 ton lots, sacks, delv	ton *i*	43.00		43.00		43.00
bbls, delv	ton *i*	53.00		53.00		53.00

g Grain alcohol 25c a gal. higher in each case. ** On a delv. basis.
z On a f.o.b. wks. basis.

h Lowest price is for pulp, highest for high grade precipitated; *i* Crystals $6 per ton higher; USP, $15 higher in each case; *Freight is equalized in each case with nearest producing point.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Compatibility with plasticizers and other lacquer resins
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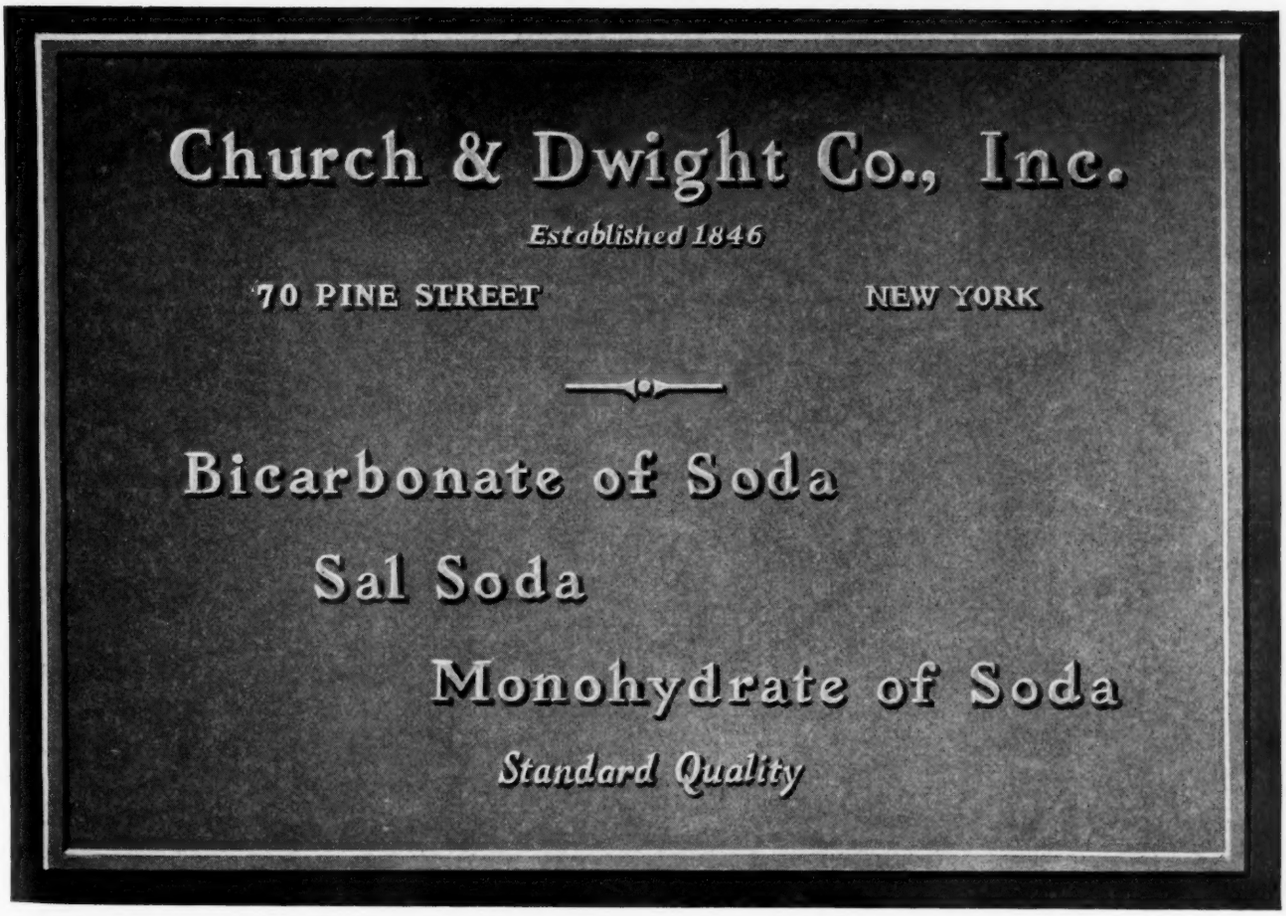
Church & Dwight Co., Inc.
Established 1846
70 PINE STREET
NEW YORK
Bicarbonate of Soda
Sal Soda
Monohydrate of Soda
Standard Quality

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Borax (continued)					
Tech, powd, 80 ton lots, sacks ton *i*	...	48.00	47.00	48.00	... 47.00
bbs, delv ton *i*	...	58.00	57.00	58.00	... 57.00
Bordeaux Mixture, drs...lb.	.11	.11½	.11	.11½	.11 .11½
Bromine, cases lb.	.30	.35	.30	.43	.30 .43
Bronze, Al, pwd, 300 lb drs lb.	...	.57	...	.57	.90½ .92½
Gold, blk lb.	.60	.65	.60	.65	.45 .65
Butanes, com 16-32° group 3 tks lb.	.02½	.03	.02¼	.03¼	.02¼ .03¼
Butyl, Acetate, norm drs, frt all'd lb.	...	.10	...	.10	.09 .10
tks, frt all'd lb.	...	.09	...	.09	.08 .09
Secondary, tks, frt all'd lb.	...	.06½	...	.06½	.05½ .06½
drs, frt all'd lb.	.07½	.08	.07½	.08	.068 .08
Aldehyde, 50 gal drs, wks lb.	.15½	.17½	.15½	.17½	.15½ .17½
Carbinol, norm (see Normal Amyl Alcohol)					
Crotonate, norm, 55 and 110 gal drs, delv ...lb.	...	.35	...	.35	.35 .75
Lactate lb.	.23½	.24½	.23½	.24½	.22½ .24½
Oleate, drs, frt all'd ..lb.	...	.25	...	.25	... .25
Propionate, drs lb.	.16½	.17	.16½	.17	.16½ .18½
tks, delv lb.	...	.15½	...	.15½	.15½ .17
Stearate, 50 gal drs ...lb.	...	.28½	...	.28½	.26½ .28½
Tartrate, drs lb.	.55	.60	.55	.60	.55 .60
Butyraldehyde, drs, lcl, wks lb.	...	.35½	...	.35½	... .35½
C					
Cadmium Metal lb.	.80	.85	.80	.85	.50 .85
Sulfide, orange, boxes .lb.	...	.75	.75	.85	.75 .90
Calcium, Acetate, 150 lb bgs c-l, delv 100 lb.	...	1.90	...	1.90	1.65 1.90
Arsenate, c-l, E of Rockies, dealers, drs lb.	.06	.06½	.06	.07¼	.06¾ .07¼
Carbide, drs lb.	...	.04¾	.05	.06	.05 .06
Carbonate, tech, 100 lb bgs c-l lb.	...	1.00	...	1.00	... 1.00
Chloride, flake, 375 lb drs, burlap bgs, c-l, delv..ton	...	20.50	...	22.00	... 22.00
paper bags, c-l, delv..ton	20.50	35.00	20.50	36.00	23.00 36.00
Solid, 650 lb drs, c-l, delv ton	19.00	35.00	19.00	35.00	... 20.00
Ferrocyanide, 350 lb bbls wks lb.	...	.20	...	.20	... .20
Gluconate, Pharm, 125 lb bbls lb.	.50	.57	.50	.57	.50 .57
Levulinate, less than 25 bbl lots, wks lb.	...	3.00	...	3.00	... 3.00
Nitrate, 100 lb bags ...ton	nom.	80.00	28.00	29.00	... 28.00
Palmitate, bbls lb.	.22	.24	.22	.24	.22 .23
Phosphate, tribasic, tech, 450 lb bbls lb.	.0635	.0705	.0635	.07½	.06½ .07½
Resinate, precip, bbls...lb.	.13	.14	.13	.14	.13 .14
Stearate, 100 lb bbls...lb.	.20½	.22½	.20½	.22½	.19 .21
Camphor, slabs lb.	.85	.86	.83	.84	.46 .77
Powder lb.	.85	.86	.83	.84	.45 .47
Carbon Bisulfide, 500 lb drs lb.	.05	.05¼	.05	.05¾	.05 .05¾
Black, c-l, bgs, delv, price varying with zone† ...lb.	...	.03	.02¾	.03¾	.02¾ .03¾
lcl, bgs, f.o.b.whse....lb.	...	.06¼	...	.06¼	... .06¼
cartons, f.o.b. whse.....lb.	...	.06¼	...	.06¼	... .06¼
cases, f.o.b. whse.....lb.	...	.07	...	.07	... .07
Decolorizing, drs, c-l...lb.	.08	.15	.08	.15	.08 .15
Dioxide, Liq 20-25 lb cyl lb.	.06	.08	.06	.08	.06 .08
Tetrachloride, 55 or 110 gal drs, c-l, delv.....lb.	...	.66½	...	.66½	.05 .05½
Casein, Standard, Dom, grd lb.	.13	.14	.10	.14	.07 .23
80-100 mesh, c-l bgs....lb.	.13½	.14½	.11	.14½	.07½ .23½
Castor Pomace, 5½ NH_3, c-l, bgs, wks ton	...	16.00	16.00	17.50	16.50 18.50
Imported, ship, bgs....ton	no prices		...	20.00	18.00 18.00
Celluloid, Scraps, ivory cs lb.	.12	.15	.12	.15	.12 .15
Transparent, cs lb.	...	.20	...	.20	... .20
Cellulose, Acetate, 50 lb kgs lb.	...	.33	.33	.34	.35 .36
Chalk, dropped, 175 lb bbls lb.	...	.02¾	.02¾	.03¾	.02¾ .03¾
Precip, heavy, 560 lb cks lb.	...	.03¼	.02¾	.03¼	.02¾ .03¼
Light, 250 lb cks lb.	...	.03¼	.03¼	.04	.03¼ .04
Charcoal, Hardwood, lump, blk, wks bu.	...	.15	...	.15	... .15
Softwood, bgs, delv* ...ton	25.00	36.00	25.00	36.00	23.00 36.00
Willow, powd, 100 lb bbls, wks lb.	.06	.07	.06	.07	.06 .07
Chestnut, clarified, tks, wks lb.	...	.01¾	...	.01¾	... .01¾
25%, bbls, wks lb.	...	.02½	...	.02½	... .02
China Clay, c-l, blk mines ton	...	7.60	7.60	9.50	7.00 7.60
Imported, lump, blk...ton	26.00	nom.	...	26.00	22.00 26.00
Chlorine, cyls, lcl, wks, contract lb.	...	.07¼	.07½	.08½	.07½ .08½
cyls, c-l, contract ...lb *j*	...	.05¼	...	.05¼	.05¼ .05½
Liq. tk, wks, contract 100 lb.	...	1.75	...	1.75	1.75 2.00
Multi, c-l, cyls, wks, cont lb.	...	.019	...	.019	1.90 2.15
Chloroacetophenone, tins, wks lb.	3.00	3.50	3.00	3.50	3.00 3.50
Chlorobenzene, Mono, 100 lb drs, lcl, wks lb.	.06	.07½	.06	.07½	.06 .07½
Chloroform, tech, 1000 lb drs lb.	...	.20	.20	.21	.20 .21
USP, 25 lb tins lb.	.30	.31	.30	.31	.30 .31
Chloropicrin, comml cyls .lb.	...	.80	...	.80	... .80
Chrome, Green, CP .....lb.	.21	.25	.21	.25	.21 .25
Yellow lb.	.13½	.14½	.13½	.14½	.13½ .15½
Chromium Acetate, 8% Chrome, bbls lb.	...	.05¾	...	.05¾	.05 .08
Fluoride, powd, 400 lb bbl lb.	.27	.28	.27	.28	.27 .28

j A delivered price; * Depends upon point of delivery; † New bulk price, tank cars ¼c per lb. less than bags in each zone.

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Coal tar, bbls bbl.	7.50	8.00	7.50	8.00	7.50 8.00
Cobalt Acetate, bbls lb.	...	.71	...	.71	.65 .71
Carbonate tech, bbls ...lb.	...	1.38	1.38	1.60	1.25 1.63
Hydrate, bbls lb.	...	1.78	...	1.78	... 1.78
Linoleate, solid, bbls ...lb.	...	.33	...	.33	... .33
paste, 6%, drs lb.	...	.31	...	.31	... .31
Oxide, black, bgs lb.	...	1.84	...	1.84	1.67 1.84
Resinate, fused, bbls ...lb.	...	.13½	...	.13½	... .13½
Precipitated, bbls ...lb.	...	.34	...	.34	... .34
Cochineal, gray or bk bgs lb.	.37	.38	.37	.38	.35 .38
Teneriffe silver, bgs....lb.	.38	.39	.38	.39	.36 .39
Copper, metal, electrol 100 lb.	11.13	11.50	11.15	11.62½	.10 12.50
Acetate, normal, bbls, wks lb.	.22	.24	.22	.24	.21 .24
Carbonate, 52-54% 400 lb. bbls lb.	...	.1610	.1610	.169	.14½ .169
Chloride, 250 lb bbls ...lb.	...	.16	.16	.18	.12½ .18
Cyanide, 100 lb drs ....lb.	...	.34	...	.34	... .34
Oleate, precip, bbls ....lb.	...	.20	...	.20	... .20
Oxide, black, bbls, wks lb.	...	.18	.18	.18¾	.15 .18¾
red 100 lb bbls lb.	...	.19½	.19½	.20	.15¾ .20
Sub-acetate verdigris, 400 lb bbls lb.	.18	.19	.18	.19	.18 .19
Sulfate, bbls, c-l, wks 100 lb.	...	4.60	4.45	4.60	4.10 4.75
Copperas crys and sugar bulk c-l, wks ton	...	14.00	...	14.00	14.00 16.00
Corn Sugar,tanners,bbls 100 lb.	...	3.31	2.99	3.31	2.89 3.19
Corn Syrup, 42°, bbls 100 lb.	...	3.42	3.02	3.42	2.92 3.17
43°, bbls 100 lb.	...	3.47	3.07	3.47	2.97 3.22
Cotton, Soluble, wet, 100 lb bbls lb.	.40	.42	.40	.42	.40 .42
Cream Tartar, powd & gran 300 lb bbls lb.	...	.34½	.28¼	.34½	.22¼ .25¾
Creosote, USP 42 lb cbys lb.	.45	.47	.45	.47	.45 .47
Oil, Grade 1 tks gal.	.13½	.14	.13½	.14	.13½ .14
Grade 2 gal.	.122	.132	.122	.132	.122 .132
Cresol, USP, drs lb.	.09¾	.10¼	.09¾	.10¼	.09½ .10½
Crotonaldehyde, 97%, 55 and 110 gal drs, wks lb.	.11	.12	.11	.12	.11 .22*
Cutch, Philippine,100 lb bale lb.	...	.04½	.04	.04½	.04 .04½
Cyanamid, pulv, bags, c-l, frt all'd, nitrogen basis, unit	...	1.27½	...	1.27½	... 1.27½
D					
Derris root 5% rotenone, bbls lb.	.24	.30	.24	.30	.24 .30
Dextrin, corn, 140 lb bgs f.o.b., Chicago ...100 lb.	...	3.80	3.40	3.80	3.30 3.75
British Gum, bgs ...100 lb.	...	4.05	3.65	4.05	3.55 3.95
Potato, Yellow, 220 lb bgs lb.	...	.07¾	...	.07¾	.07 .08¾
White, 220 lb bgs, lcl lb.	.08½	.09	.08½	.09	.08 .09
Tapioca, 200 bgs, lcl ...lb.	...	.0715		.0715	.0715
White, 140 lb bgs...100 lb.	...	3.75	3.35	3.75	3.25 3.70
Diamylamine, c-l, drs, wks lb.	...	.47	...	.47	... .47
lcl drs, wks lb.	...	.50	...	.50	... .50
tks, wks lb.	...	.45	...	.45	... .45
Diamylene, drs, wks .....lb.	.095	.102	.095	.102	.095 .102
tks, wks lb.	...	.08½	...	.08½	... .08½
Diamylether, wks, drs ...lb.	.085	.092	.085	.092	.085 .092
tks, wks lb.	...	.075	...	.075	... .075
Oxalate, lcl, drs, wks..lb.	...	.30	...	.30	... .30
Diamylphthalate, drs, wks lb.	.21	.21½	.21	.21½	.19 .21
Diamyl Sulfide, drs, wks lb.	...	1.10	...	1.10	... 1.10
Diatomaceous Earth, see Kieselguhr.					
Dibutoxy Ethyl Phthalate, drs, wks lb.	...	.35	...	.35	... .35
Dibutylamine, lcl, drs, wks lb.	.51	.53	.51	.53	.53 .55
c-l drs, wks lb.	...	.50	...	.50	... ...
tks, wks lb.	...	.48	...	.48	... ...
Dibutyl Ether, drs, wks, lcl lb.	.24½	.25	.24½	.25	.24½ .25
Dibutylphthalate, drs, wks, frt all'd lb.	.19	.19½	.19	.19½	.19 .19½
Dibutyltartrate, 50 gal drs lb.	...	.50	...	.50	.45 .54
Dichlorethylene, drs lb.	...	.25	...	.25	... .25
Dichloroethylether, 50 gal drs, wks lb.	.15	.16	.15	.16	.15 .16
tks, wks lb.	...	.14	...	.14	... .14
Dichloromethane, drs, wks lb.	...	.23	...	.23	... .23
Dichloropentanes, drs, wks lb.	...	.025	...	.025	no prices
tks, wks lb.	...	.0221	...	.0221	no prices
Diethanolamine, tks, wks..lb.	...	.22½	...	.22½	.22½ .23
Diethylamine, 400 lb drs, lcl, f.o.b., wks lb.	...	.70	...	.70	.70 3.00
Diethylaniline, 850 lb drs lb.	.40	.52	.40	.52	.40 .52
Diethyl Carbinol, drs ...lb.	.60	.75	.60	.75	.60 .75
Diethylcarbonate, com drs lb.	...	.25	...	.25	.31¾ .35
Diethylorthotoluidin, drs ..lb.	.64	.67	.64	.67	.64 .67
Diethylphthalate, 1000 lb drs lb.	.19	.19½	.19	.19½	.19 .19½
Diethylsulfate, tech, drs, wks, lcl lb.	.13	.14	.13	.14	.13 .14
Diethyleneglycol, drs ....lb.	.14½	.15½	.14½	.15½	.14½ .17
Mono ethyl ethers, drs..lb.	.14½	.15½	.14½	.16	.15 .16
tks, wks lb.	...	.13½	...	.13½	.13½ .14
Mono butyl ether, drs..lb.	.22½	.24½	.22½	.24½	.23 .24
tks, wks lb.	...	.22	...	.22	... .22
Diethylene oxide, 50 gal drs, wks lb.	.20	.24	.20	.24	.20 .24
Diglycol Laurate, bbls....lb.	...	.16	.16	.21	.15 .23
Oleate, bbls lb.	...	.17	.13	.17	.13 .20
Stearate, bbls lb.	...	.22	.22	.26	.20 .28
Dimethylamine, 400 lb drs, pure 25 & 40% sol 100% basis lb.	...	1.00	...	1.00	... 1.00
Dimethylaniline, 340 lb drs lb.	.23	.24	.23	.24	.23 .24
Dimethyl Ethyl Carbinol,drs lb.	.60	.75	.60	.75	.60 .75
Dimethyl phthalate, drs, wks, frt all'd lb.	...	.18½	...	.18½	... .19
Dimethylsulfate, 100 lb drs lb.	.45	.50	.45	.50	.45 .50

k Higher price is for purified material; * These prices were on a delivered basis.

ABC

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U. S. P.

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Tank Cars Drums Carboys

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Propionyl Chloride
Sulfuryl Chloride
Thionyl Chloride
Caustic Soda
Liquid Chlorine
Muriatic Acid

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HOOKER ELECTROCHEMICAL COMPANY
NIAGARA FALLS, NEW YORK
NEW YORK CITY · TACOMA, WASHINGTON

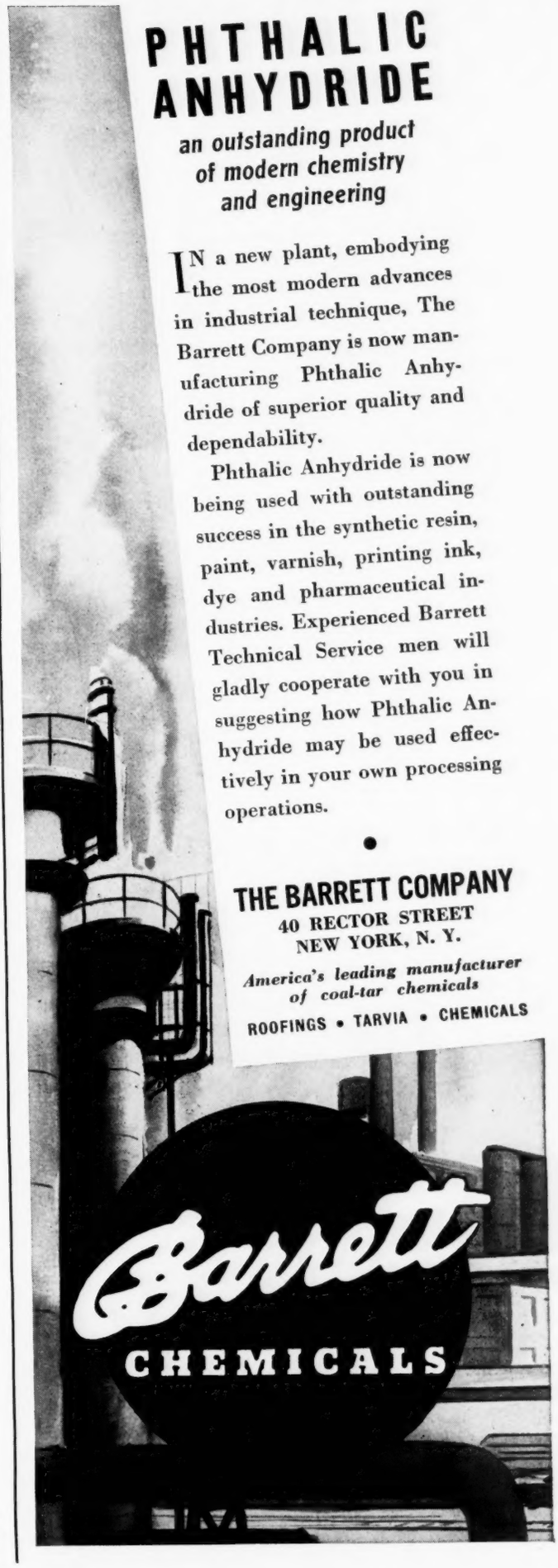
Dinitrobenzene
Glauber's Salt

Prices

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Dinitrobenzene, 400 lb bbls lb. *k*	...	.18	.18	.19	.16	.19
Dinitrochlorobenzene, 400 lb bbls lb.	...	.14	...	.14	.13½	.14
Dinitronaphthalene, 350 lb bbls lb.	.35	.38	.35	.38	.35	.38
Dinitrophenol, 350 lb bbls lb.	...	.22	.22	.23	.22	.24
Dinitrotoluene, 300 lb bbls lb.	...	.15½	...	.15½	...	.15½
Diphenyl, bbls lb.	.15	.20	.15	.20	.15	.25
Diphenylamine lb.	...	.25	.25	.32	.32	.32
Diphenylguanidine, 100 lb drs lb.	.35	.37	.35	.37	.31	.37
Dip Oil, see Tar Acid Oil.						
Divi Divi pods, bgs shipmt ton	...	nom.	...	nom.	...	nom.
Extract lb.	.05¾	.06¾	.05¾	.06¾	.05¾	.06¾
E						
Egg Yolk, dom., 200 lb cases lb.	.59	.62	.57	.62	.59	.69
Epsom Salt, tech, 300 lb bbls c-l, NY .....100 lb.	...	1.90	1.90	2.10	1.90	2.10
USP, c-l, bbls .....100 lb.	...	2.10	...	2.10	...	2.10
Ether, USP anaesthesia 55 lb drs lb.	...	.26	...	.26	.22	.23
Isopropyl 50 gal drs ...lb.	.07	.08	.07	.08	.07	.08
tks, frt all'd lb.	...	.06	...	.06	...	.06
Nitrous conc bottles ...lb.	...	.68	...	.68	...	.68
Synthetic, wks, drs lb.	.08	.09	.08	.09	.08	.09
Ethyl Acetate, 85% Ester tks, frt all'd' lb.	...	.07	.07	.06½	.051	.061
drs, frt all'd lb.	...	.08	.07½	.08¼	.061	.08
99%, tks, frt all'd lb.	...	.07¼	.0685	.08	.0585	.0685
drs, frt all'd lb.	...	.08¼	.0785	.08¾	.0685	.0785
Acetoacetate, 110 gal drs lb.	...	.27½	...	.27½	...	.27½
Benzylaniline, 300 lb drs lb.	.86	.88	.86	.88	.86	.88
Bromide, tech drs lb.	.50	.55	.50	.55	.50	.55
Cellulose, drs, wks, frt all'd lb	.45	.50	.45	.50	.45	.50
Chloride, 200 lb drs ....lb.	.18	.20	.18	.20	.22	.24
Chlorocarbonate, cbys lb.	...	.30	...	.30	...	.30
Crotonate, drs lb.	...	35	...	.35	.35	.75
Formate, drs, frt all'd lb	.25	.26	.23	.24	.27	.28
Lactate, drs, wks ....lb.	...	.33½	...	.33½	...	.33½
Oxalate, drs, wks ....lb.	...	.25	...	.25	.30	.34
Oxybutyrate, 50 gal drs, wks lb.	1.00	nom.	.30	1.00	.30	.30½
Silicate, drs, wks ....lb.	...	.77	...	.77	...	.77
Ethylene Dibromide, 60 lb drs lb	.65	.70	.65	.70	.65	.70
Chlorhydrin, 40%, 10 gal cbys chloro, cont ... lb.	.75	.85	.75	.85	.75	.85
Anhydrous lb		.75		.75		.75
Dichloride, 50 gal drs, wks lb.	.0595	.0694	.0595	.0694	.0545	.0994
Glycol, 50 gal drs, wks lb.	.14½	.18½	.14½	.18½	.14½	.21
tks, wks lb.	...	.13½	...	.13½	.13½	.16
Mono Butyl Ether, drs, wks lb.	.16½	.17½	.16½	.21	.16½	.22
tks, wks lb.	...	.15½	...	.15½	.15½	.19
Mono Ethyl Ether, drs, wks lb.	.14½	.15½	.14½	.15½	.14½	.17
tks, wks lb.	...	.13½	...	.13½	.13½	.15
Mono Ethyl Ether Acetate, drs, wks ....lb.	.11½	.12½	.11½	.13	.11½	.14
tks, wks lb.	...	.10½	...	.10½	.10½	.13
Mono Methyl Ether, drs wks lb.	.15½	.16½	.15½	.17	.16	.22
tks, wks lb.	...	.14½	...	.14½	.14½	.17
Oxide, cyl lb.	.50	.55	.50	.55	.50	.55
Ethylideneaniline lb.	45	.47½	.45	.47½	.45	.47½
F						
Feldspar, blk pottery ...ton	17.00	19.00	17.00	19.00	17.00	19.00
Powd, blk wks ....ton	14.00	17.50	14.00	17.50	14.00	14.50
Ferric Chloride, tech, crys, 475 lb bbls lb.	.05	.07½	.05	.07½	.05	.07½
sol, 42° cbys lb.	.06½	.07	.06¼	.07	.06¼	.06½
Fish Scrap, dried, unground wks unit *l*	...	3.60	3.60	4.25	3.00	4.25
Acid, Bulk, 6 & 3%, delv Norfolk & Baltimore basis unit *m*	...	3.50	3.00	3.50	2.35	3.00
Fluorspar, 98% bgs lb.	...	32.60	...	32.60	30.00	33.00
Formaldehyde, USP, 400 lb bbls, wks lb.	.055	.06	.05¾	.06¼	.05¾	.06¼
Fossil Flour lb.	.02½	.04	.02½	.04	.02½	.04
Fullers Earth, blk, mines ton	...	15.00	...	15.00	10.00	11.00
Imp powd, c-l, bgs ....ton	no prices		...	25.00	23.00	30.00
Furfural (tech) drs, wks lb.	.10	.15	.10	.15	.10	.15
Furfuramide (tech) 100 lb drs lb.	...	.30	...	.30	...	.30
Fusel Oil, 10% impurities lb.	.16	.17¼	.16	.17¼	.12½	.17¼
Fustic, crystals, 100 lb boxes lb.	.24	.25	.24	.28	.22	.28
Liquid 50°, 600 lb bbls lb.	.10½	.14	.10½	.14	.09½	.14
Solid, 50 lb boxes ....lb.	.19	.21	.19	.21	.17½	.21
G						
G Salt paste, 360 lb bbls lb.	...	.45	.45	.47	.45	.47
Gambier, com 200 lb bgs lb.	...	.07	...	.07	.06¾	.07¼
Singapore cubes, 150 lb bgs .....100 lb.	...	.09	.09	.10	.08	.10
Gelatine, tech, 100 lb cs...lb.	.42	.43	.42	.43	.42	.50
Glauber's Salt, tech, c-l, bgs, wks* .....100 lb.	.95	1.18	.95	1.18	.95	1.18
Anhydrous, see Sodium Sulfate						

l + 10; *m* + 50; * Bbls. are 20c higher.

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Glue, bone, com grades, c-l bgs ..... lb.	.13½	.15	.13½	.15½	.13½	.15½
Better grades, c-l, bgs lb.	.15	.23	.15	.23	.14½	.15½
Glycerin, CP, 550 lb drs lb.	...	.12½	...	.12½	...	.12½
Dynamite, 100 lb drs ... lb.	...	nom.	...	nom.	...	.09
Saponification, drs ..... lb.	...	.13	...	.13	.08½	.10
Soap Lye, drs ..... lb.	.07¾	.08¼	.07¾	.08¼	.07½	.07⅞
Glyceryl Bori-Borate, bbls lb.	...	.40	...	.40	...	.40
Monoricinoleate, bbls ... lb.	...	.27	...	.27	...	.27
Monostearate, bbls ..... lb.	...	.30	...	.30	...	.30
Oleate, bbls ..... lb.	...	.22	...	.22	...	.22
Phthalate ..... lb.	...	.38	.37	.38	...	.37
Glyceryl Stearate, bbls ... lb.	...	.18	...	.18	.24	.27½
Glycol Bori-Borate, bbls.. lbs.	...	.22	...	.22	.22	.23
Phthalate, drs ..... lb.	...	.38	...	.38	.38	.40
Stearate, drs ..... lb.	...	.26	...	.26	...	.26
GUMS						
Gum Aloes, Barbadoes ... lb.	.80	.85	.80	.90	.85	.90
Arabic, amber sorts ... lb.	no prices		.08½	.14	.09	.24
White sorts, No. 1, bgs lb.	no prices		.28	.35	.23	.35
No. 2, bgs ..... lb.	no prices		.27	.34	.21	.34
Powd, bbls ..... lb.	no prices		.12½	.17	.12½	.27
Asphaltum, Barbadoes (Manjak) 200 lb bgs, f.o.b. NY ..... lb.	.04½	.05½	.02½	.10½	.02½	.10½
California, f.o.b. NY, drs ton	29.00	36.50	29.00	36.50	29.00	55.00
Egyptian, 200 lb cases, f.o.b. NY ..... lb.	.12	.15	.12	.15	.12	.15
Benzoin Sumatra, USP, 120 lb cases ..... lb.	.18	.20	.17	.24	.17	.34
Copal, Congo, 112 lb bgs, clean, opaque ..... lb.	...	.29½	.	.29½	.18¼	.29½
Dark amber ..... lb.	...	.12⅜	.11⅜	.12⅜	.07⅛	.11⅜
Light amber ..... lb.	...	.17	...	.17	.11¼	.17
Copal, East India, 180 lb bgs						
Macassar pale bold .... lb.	...	.13⅞	.13⅞	.15⅝	.11⅜	.15¼
Chips ..... lb.	...	.07½	.07½	.09	.05⅜	.08½
Dust ..... lb.	...	.05¼	.04¾	.06¾	.03¼	.07⅛
Nubs ..... lb.	...	.11⅛	.11⅛	.14⅜	.09½	.13¾
Singapore, Bold ..... lb.	...	.15¾	.14⅝	.17½	.14	.18¼
Chips ..... lb.	...	.08½	.08½	.09⅛	.05⅝	.10¼
Dust ..... lb.	...	.05¼	.04¾	.06¾	.03¼	.07⅛
Nubs ..... lb.	...	.11	.11	.13½	.09⅝	.14⅜
Copal Manila, 180-190 lb	...	.13⅞	.13¾	.16¾	.09¾	.14½
Loba B ..... lb.	...	.13¾	.13½	.16⅛	.09	.14⅛
Loba C ..... lb.	...	.13½	.12⅛	.14½	.07⅞	.12½
DBB ..... lb.	...	.12⅛	.06⅞	.12⅛	.05⅛	.08½
MA sorts ..... lb.	...	.09	.09	.13¾	.05⅞	.11
Copal Pontianak, 224 lb cases, bold genuine .. lb.	...	.15⅜	.15⅛	.18½	.15¼	.18½
Chips ..... lb.	...	.10	.08¾	.10½	.07⅛	.11½
Mixed ..... lb.	...	.14⅜	.14⅛	.16⅝	.13⅜	.16⅝
Nubs ..... lb.	...	.12¾	.10¾	.13½	.10½	.14⅜
Split ..... lb.	...	.13¾	.13½	.16⅛	.12	.16⅛
Damar Batavia, 136 lb cases						
A ..... lb.	...	.21⅝	.21⅝	.22¾	.20	.23¾
B ..... lb.	...	.20¼	.20⅛	.21⅞	.18½	.21⅛
C ..... lb.	...	.14⅝	.15⅝	.15¼	.13½	.15⅝
D ..... lb.	...	.13¼	.13¼	.13¾	.12¼	.14¼
A/D ..... lb.	...	.13⅞	.13⅞	.14½	.12¾	.15¼
A/E ..... lb.	...	.12⅞	.12⅞	.13⅜	.11⅜	.13¾
E ..... lb.	...	.10	.10	.10⅜	.07⅜	.10
F ..... lb.	...	.08	.08	.08¾	.07¼	.08¾
Singapore, No. 1 ..... lb.	...	.16⅝	.16⅝	.19⅝	.13¼	.19½
No. 2 ..... lb.	...	.12¼	.12¼	.15¾	.10½	.16⅜
No. 3 ..... lb.	...	.07⅛	.07⅛	.09	.05¼	.09⅛
Chips ..... lb.	...	.11	.11	.12½	.09¼	.12½
Dust ..... lb.	...	.07⅛	.07⅛	.09	.05¼	.09⅛
Seeds ..... lb.	...	.09⅞	.09⅞	.10½	.07⅜	.10½
Elemi, cns, c-l ..... lb.	...	.10½	.10⅜	.11⅝	.08⅛	.12⅝
Ester ..... lb.	.06¼	.06¾	.06¼	.06¾	.06	.07
Gamboge, pipe, cases .... lb.	.70	.75	.70	.75	.55	.80
Powd, bbls ..... lb.	.75	.80	.75	.80	.60	.85
Ghatti, sol, bgs ..... lb.	.11	.15	.11	.15	.11	.15
Karaya, bbls, bxs, drs ... lb.	.14	.33	.14	.33	.14	.33
Kauri, NY						
Brown XXX, cases .... lb.	...	.60	...	60	.60	.60½
BX ..... lb.	...	.38	...	.38	...	.38
B1 ..... lb.	...	.28	...	.28	...	.28
B2 ..... lb.	...	.24	...	.24	...	.24
B3 ..... lb.	...	.18½	...	.18½	...	.18½
Pale XXX ..... lb.	...	.61	...	.61	...	.61
No. 1 ..... lb.	...	.41	...	.41	...	.41
No. 2 ..... lb.	...	.24	...	.24	...	.24
No. 3 ..... lb.	...	.17¾	...	.17¾	...	.17¾
Kino, tins ..... lb.	4.00	4.50	4.00	4.50	2.50	4.50
Mastic ..... lb.	nom.	1.15	.85	.90	.55	.90
Sandarac, prime quality, 200 lb bgs & 300 lb cks... lb.	.40	.45	.35	.37	.15	.37
Senegal, picked bags ..... lb.	...	.30	...	.30	.25	.30
Sorts ..... lb.	...	.13	...	.13	.09¼	.13
Thus, bbls ..... 280 lbs.	15.00	15.25	15.00	15.25	13.50	15.25
Tragacanth, No. 1, cases.. lb.	no prices		2.65	2.70	2.25	2.50
No. 2 ..... lb.	no prices		2.55	2.60	1.90	2.40
No. 3 ..... lb.	no prices		2.45	2.50	1.60	2.25
Yacca, bgs ..... lb.	.03½	.04	.03½	.04	.03½	.08
H						
Helium, cyl (200 cu. ft.) cyl.	...	25.00	...	25.00	...	25.00
Hematine crystals, 400 lb bbls lb.	.20	.30	.20	.30	.20	.34
Hemlock, 25%, 600 lb bbls. wks ..... lb.	...	.03⅛	.03⅛	.03⅜	.03	.03⅜
tks ..... lb.	...	.02¾	.02¾	.03	.02⅝	.02¾
Hexalene, 50 gal drs, wks lb.	...	.30	...	.80	...	.30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Prices

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Hexane, normal 60-70° C. Group 3, tks ..... gal.	...	.10½	...	.10½	... .10½
Hexamethylenetetramine, powd, drs ..... lb.	.32	.33	.32	.33	.32 .36
Hexyl Acetate, secondary, delv, drs ..... lb.	.13	.13½	.13	.13½	.13 .13½
tks ..... lb.	...	.12	...	.12	... .12
Hoof Meal, f.o.b. Chicago unit	2.25	2.40	2.50	3.15	2.50 3.25
Hydrogen Peroxide, 100 vol, 140 lb cbys ..... lb.	...	.20	...	.20	.19½ .20
Hydroxylamine Hydrochloride ..... lb.	...	3.15	...	3.15	... 3.15
Hypernic, 51°, 600 lb bbls lb.	...	.14	...	.14	.13 .21
I					
Indigo, Bengal, bbls ..... lb.	1.63	1.67	1.63	1.67	... 2.40
Synthetic, liquid ..... lb.	.16½	.19	.16½	.19	.16½ .19
Iodine, Resublimed, jars .. lb.	...	2.00	...	2.00	1.75 2.00
Irish Moss, ord, bales ... lb.	.15	.16	.15	.16	.10 .10
Bleached, prime, bales .. lb.	.28	.30	.28	.30	.19 .20
Iron Acetate Liq. 17°, bbls delv ..... lb.	.03	.04	.03	.04	.03 .04
Chloride see Ferric Chloride.					
Nitrate, coml, bbls. 100 lb.	2.75	3.00	2.75	3.00	2.32 3.11
Isobutyl Carbinol (128-132° C) drs, wks ..... lb.	...	.22½	.22½	.34	.33 .34
tks, wks ..... lb.	...	.21½	.21½	.32	... .32
Isopropyl Acetate, tks, frt all'd ..... lb.	...	.06	.05½	.06	.051 .06
drs, frt all'd ..... lb.	.07	.07½	.06½	.07½	.061 .07
Ether, see Ether, isopropyl.					
Keiselguhr, dom bags, c-l, Pacific Coast ..... ton	22.00	35.00	22.00	35.00	22.00 35.00
L					
Lead Acetate, f.o.b. NY, bbls, White, broken ..... lb.	...	.11	...	.11	.10 .11
cryst, bbls ..... lb.	...	.11	...	.11	.10 .11
gran, bbls ..... lb.	...	.11¼	...	.11¼	.10¼ .11¼
powd, bbls ..... lb.	...	.11¼	...	.11¼	.10¼ .11¼
Arsenate, East, drs ... lb.	...	.08½	.08½	.11	.10 .11½
Linoleate, solid, bbls... lb.	...	.19	...	.19	... .19
Metal, c-l, NY ..... 100 lb.	5.00	5.05	5.00	5.25	4.75 5.55
Nitrate, 500 lb bbls, wks lb.	.11	.14	.11	.14	.10 .12
Oleate, bbls ..... lb.	.18½	.20	.18½	.20	.18½ .20
Red, dry, 95% Pb_3O_4, delv ..... lb.	...	.07¾	.07½	.08	.07¼ .08½
97% Pb_3O_4, delv ... lb.	...	.0765	.0765	.08¼	.07½ .0835
98% Pb_3O_4, delv ... lb.	...	.08½	.08	.08¾	.07¾ .0860
Resinate, precip, bbls.. lb.	...	.16½	...	.16½	... .16½
Stearate, bbls ..... lb.	...	.26	...	.26	.22 .25
Titanate, bbls, c-l, f.o.b. wks, frt all'd ..... lb.	.10	.10¼	.10	.10¼	.11 .11½
White, 500 lb bbls, wks, lb.	...	.07¼	.07	.07¼	... .07
Basic sulfate, 500 lb bbls, wks ..... lb.	...	.06½	.06¼	.06½	... .06¼
Lime, chemical quicklime, f.o.b., wks, bulk ... ton	7.00	13.00	7.00	13.00	7.00 8.00
Hydrated, f.o.b. wks... ton	8.50	16.00	8.50	16.00	8.50 12.00
Lime Salts, see Calcium Salts					
Lime, sulfur, dealers, tks. gal.	...	.08½	.07½	.11½	.08 .11½
drs ..... gal.	.11	.15	.11	.16	.11 .16
Linseed Meal, bgs ..... ton	...	27.00	27.00	37.00	34.00 42.00
Litharge, coml, delv, bbls lb.	.06¾	.07	.06½	.06¾	.06¼ .071
Lithopone, dom, ordinary, delv, bgs ..... lb.	...	.036	...	.036	.03¾ .04½
bbls ..... lb.	...	.0385	.03¾	.03¾	.04 .04½
High strength, bgs ..... lb.	...	.05	...	.05	.05¼ .05½
bbls ..... lb.	...	.05¼	...	.05¼	.05½ .05¾
Titanated, bgs ..... lb.	...	.05	...	.05	.05¼ .05½
bbls ..... lb.	...	.05¼	...	.05¼	.05½ .05¾
Logwood, 51°, 600 lb bbls lb.	.10½	.12½	.10½	.12½	.09½ .12½
Solid, 50 lb boxes .... lb.	.16½	.20½	.16½	.20½	.15 .20½
M					
Madder, Dutch ..... lb.	.22	.25	.22	.25	.22 .25
Magnesite, calc, 500 lb bbls ton	60.00	65.00	58.00	66.00	58.00 66.00
Magnesium Carb, tech, 70 lb bgs, wks ..... lb.	...	.06¼	...	.06¼	.05¼ .06½
Chloride flake, 375 lb bbls, c-l, wks ..... ton	...	32.00	32.00	42.00	39.00 42.00
Fluosilicate, crys, 400 lb bbls, wks ..... lb.	.10	.10½	.10	.10½	.10 .10½
Oxide, calc tech, heavy bbls, frt all'd ..... lb.	...	.26	.25	.30	.25 .30
Light bbls above basis lb.	...	.26	.20	.26	.20 .25
USP Heavy, bbls, above basis ..... lb.	...	.26	.25	.30	.25 .30
Palmitate, bbls ..... lb.	.33	nom.	.33	nom.	.33 nom.
Silicofluoride, bbls .... lb.	.11	.11½	.11	.11½	.09½ .11½
Stearate, bbls ..... lb.	.24	.27	.24	.27	.21 .24
Manganese, acetate, drs... lb.	...	.26½	...	.26½	... .26¼
Borate, 30%, 200 lb bbls lb.	.15	.16	.15	.16	.15 .16
Chlorate, 600 lb cks.... lb.	...	.08½	...	.08½	.07½ .12
Dioxide, tech (peroxide), paper bags, c-l ..... ton	...	62.50	62.50	66.50	47.50 66.50
Hydrate, bbls ..... lb.	...	.82	...	.82	... .32
Linoleate, liq, drs ..... lb.	.18	.19½	.18	.19½	.18 .19¼
solid, precip, bbls .... lb.	...	.19	...	.19	... .19
Resinate, fused, bbls ... lb.	.08¼	.08½	.08¼	.08½	.08¼ .08½
precip, drs ..... lb.	...	.12	...	.12	... .12
Sulfate, tech, anhyd, 90-95%, 550 lb drs ... lb.	.08	.08½	.08	.08½	.07 .08½
Mangrove, 55%, 400 lb bbls lbs.	...	...	...	...	... .04
Bark, African ..... ton	...	39.50	30.00	39.50	23.00 35.00

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Mannitol, pure cryst, cs, wks lb.	...	.90	.90	1.00	.95	1.20
commercial grd, 250 lb bbls ..... lb.	.38	.45	.38	.50	.42	.57
Marble Flour, blk ..... ton	12.00	14.00	12.00	14.00	12.00	14.00
Mercury chloride (Calomel) lb.	....	2.95	2.45	2.95	1.36	2.57
Mercury metal ..76 lb. flasks	198.00	228.50	197.00	228.50	95.00	170.00
Mesityl Oxide, f.o.b. dest., tks ..... lb.	...	.15	...	.15	.10½	.15
drs, c-l ..... lb.	...	.16	...	.16	.11½	.16
drs, lcl ..... lb.	...	.16½	...	.16½	.12	.16½
Meta-nitro-aniline ..... lb.	.67	.69	.67	.69	.67	.69
Meta-nitro-paratoluidine 200 lb bbls ..... lb.	1.05	1.10	1.05	1.40	1.30	1.55
Meta-phenylene diamine 300 lb bbls ..... lb.	...	.65	...	.65	.80	.84
Meta-toluene-diamine 300 lb bbls ..... lb.	...	.65	.65	.67	.65	.67
Methanol, denat, grd, drs, c-l frt all'd ..... gal.	...	.45	...	.45	.41	.46
tks, frt all'd ..... gal.	...	.40	...	.40	.35	.40
Pure, drs, c-l, frt all'd' gal.	...	.35	.35	.38	...	.38
tks ..... gal.	...	.30	.30	.33	...	.33
95%, tks ..... gal.	...	.28	.28	.31	...	.31
97%, tks ..... gal.	...	.29	.29	.32	...	.32
Methyl Acetate, tech tks, delv ..... lb.	.06	.07	.06	.07	.06	.06½
55 gal drs, delv ..... lb.	.07	.08	.07	.08	.07	.08
C.P. 97-99%, tks, delv lb.	.09½	10½	.09½	.10½	...	.06¼
55 gal drs, delv ..... lb.	.10½	.11½	.10½	.11½	.07¼	.07¾
Acetone, frt all'd, drs gal. *p*	...	.37½	.41	.44	.30	.44
tks, frt all'd ..... gal. *p*	...	.32	.35	.39	.25	.35
Synthetic, frt all'd, east of Rocky M., drs ..... gal. *p*	...	.44	.38	.44	.38	.41
tks, frt all'd ... gal.	...	.36	...	.36	...	.31½
West of Rocky M., frt all'd, drs .. gal. *p*	...	.48	.42	.48	...	.42
tks, frt all'd... gal. *p*	...	.39½	.35	.39½	...	.35
Anthraquinone ..... lb.	...	.83	...	.83	...	.83
Butyl Ketone, tks ..... lb.	...	.10½	...	.10½	...	.10½
Cellulose, 100 lb lots, frt all'd ..... lb.	...	.70	...	.70	...	...
less than 100 lbs. f.o.b. wks ..... lb.	...	.75	...	.75	...	...
Chloride, 90 lb. cyl .... lb.	.32	.40	.32	.40	.32	.40
Ethyl Ketone, tks, frt all'd lb.	...	.06	.05½	.06	.05	.05½
50 gal drs, frt all'd' c-l lb	.07	.07½	.06½	.07½	.06	.07
Formate, drs, frt all'd. .lb.	...	.89	...	.89	.35	.39
Hexyl, Ketone, pure, drs lb.	...	.60	...	.60	...	.60
Lactate, drs, frt all'd... lb.	...	.80	...	.80	...	.30
Mica, dry grd, bgs, wks.. ton	...	30.00	...	30.00	...	30.00
Michler's Ketone, kgs ...lb.	...	2.50	...	2.50	...	2.50
Monoamylamine, c-l, drs, wks lb.	...	.52	...	.52	...	.52
lcl, drs, wks ..... lb.	.53	.55	.53	.55	...	...
tks, wks ..... lb.	...	.50	...	.50	...	...
Monobutylamine, drs, c-l, wks ..... lb.	...	.50	...	.50	.50	.65
lcl, wks ..... lb.	.51	.53	.51	.53	...	...
tks, wks ..... lb.	...	.48	...	.48	...	...
Monochlorobenzene, see "C"						
Monoethanolamine, tks, wks lb.	...	.23	...	.23	...	.23
Monoethylamine (100% basis) lcl, drs, f.o.b. wks ....lb.	...	.65	...	.65	...	...
Monomethylamine, drs, frt all'd, E Mississippi, c-l lb.	...	.65	...	.65	...	.65
Monomethylparamiosulfate, 100 lb drs ..... lb.	3.75	4.00	3.75	4.00	3.75	4.00
Morpholine, drs 55 gal, lcl wks ..... lb.	...	.75	...	.75	...	...
Myrobalans 25%, liq bbls lb.	no prices		no prices		.03¼	.04¼
50% Solid, 50 lb boxes lb.	no prices		no prices		.04¾	.05
J1 bgs ..... ton	...	32.00	28.50	32.00	24.00	50.00
J2 bgs ..... ton	...	27.00	23.00	27.00	19.00	41.00
N						
Naphtha, v.m.&p. (deodorized) see petroleum solvents.						
Naphtha, Solvent, water-white, tks ..... gal.	...	.27	...	.27	.26	.27
drs, c-l ..... gal.	...	.32	...	.32	.31	.32
Naphthalene, dom, crude bgs. wks ..... lb.	2.25	2.75	2.25	2.75	2.25	2.85
imported, cif, bgs ...lb.	no prices		...	3.00	1.50	1.85
Balls, flakes, pks ..... lb.	.06¼	.07¾	.06¼	.07¾	.06½	.07½
Balls, ref'd, bbls, wks..lb.	...	.07	.06¾	.07	.05¾	.06¾
Flakes, ref'd, bbls, wks lb.	...	.07	.06¾	.07	.05¾	.06¾
Nickel Carbonate, bbls...lb.	.36	.36½	.36	.36½	.36	.37½
Chloride, bbls ..... lb.	.18	.20	.18	.20	.18	.20
Metal ingot ..... lb.	...	.35	...	.35	...	.35
Oxide, 100 lb kgs, NY lb.	.35	.38	.35	.38	.35	.37
Salt, 400 lb bbls, NY lb.	.13	.13½	.13	.13½	.13	.13½
Single, 400 lb bbls, NY lb.	.13	.13½	.13	.13½	.13	.13½
Nicotine, 40%, drs, sulfate, 55 lb drs ..... lb.	...	.70	...	.70	.70	.76
Nitre Cake, blk ..... ton	...	16.00	...	16.00	...	16.00
Nitrobenzene redistilled, 1000 lb drs, wks ..... lb.	.08	.09	.08	.10	.08	.10
tks ..... lb.	...	.07	...	.07	.07	.07½
Nitrocellulose, c-l, lcl, wks lb.	.20	.29	.20	.29	.22	.29
Nitrogen Sol. 45½% ammon, f.o.b. Atlantic & Gulf ports, tks, unit ton, N basis	...	1.2158	...	1.2158	...	1.2158
Nitrogenous Mat'l, bagsimp unit	...	2.20	2.20	2.60	2.25	2.85
dom, Eastern wks ...unit	...	2.20	2.20	2.90	2.30	3.00
dom. Western wks ...unit	...	1.95	1.95	2.00	1.90	2.25
Nitronaphthalene, 550 lb bbls lb.	.24	.25	.24	.25	.24	.25
Nutgalls Alleppo, bgs ...lb.	.29	.32	.29	.30	.22	.23

a Country is divided in 4 zones, prices varying by zone; *b* Country is divided into 4 zones. Also see footnote directly above; *q* Naphthalene quoted on Pacific Coast F.A.S. Phila., or N. Y.

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Oak Bark Extract
Phloroglucinol

Prices

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Oak Bark Extract, 25%, bbls lb.	.03⅛	.03⅜	.03⅜	.03⅜	.03⅛	.03½
tks lb.	...	.02¾	...	.02¾	...	.02¼
Octyl Acetate, tks, wks lb.	...	.15	...	.15	.15	.17
Orange-Mineral, 1100 lb cks NY lb.	.10¾	.11¾	.10½	.12	.10¼	.10¾
Orthoaminophenol, 50 lb kgs lb.	2.15	2.25	2.15	2.25	2.15	2.25
Orthoanisidine, 100 lb drs lb.	...	.70	.70	.74	.70	.74
Orthochlorophenol, drs lb.	...	.32	...	.32	...	.32
Orthocresol, 30.4°, drs, wks lb.	.16	.16½	.16	.16½	.14½	.17½
Orthodichlorobenzene, 1000 lb drs lb.	.06	.07	.06	.07	.06	.07
Orthonitrochlorobenzene, 1200 lb drs, wks lb.	.15	.18	.15	.18	.15	.18
Orthonitroparachlorphenol, tins lb.	...	.75	...	.75	...	.75
Orthonitrophenol, 350 lb drs lb.	.85	.90	.85	.90	.85	.90
Orthonitrotoluene, 1000 lb drs, wks lb.	...	.09	...	.09	.08	.10
Orthotoluidine, 350 lb bbls, lcl lb.	...	.19	...	.19	.16	.19
Osage Orange, cryst, bbls lb.	...	.21	...	.21	.17	.25
51° liquid lb.	...	.10	...	.10	.07	.09
P						
Paraffin, rfd, 200 lb bgs 122-127° M P lb.	.04⅜	.06¾	.05	.0675	.03¾	.06¾
128-132° M P lb.	.068	.0705	.068	.0705	.04	.0705
133-137° M P lb.	.073	.0755	.073	.0755	.0465	.0755
Para aldehyde, 99%, tech, 110-55 gal drs, wks lb.	.10	.11¼	.10	.11¼	.10	.16*
Aminoacetanilid, 100 lb kgs lb.	...	.85	...	.85	...	.85
Aminohydrochloride, 100 lb kgs lb.	1.25	1.30	1.25	1.30	1.25	1.30
Aminophenol, 100 lb kgs lb.	...	1.05	...	1.05	...	1.05
Chlorophenol, drs lb.	...	.32	...	.32	.30	.45
Dichlorobenzene 200 lb drs, wks lb.	.11	.12	.11	.12	.11	.12
Formaldehyde, drs, wks lb.	.34	.35	.34	.35	.34	.35
Nitroacetanilid, 300 lb bbls lb.	.45	.52	.45	.52	.45	.52
Nitroaniline, 300 lb bbls, wk lb.	...	.47	...	.47	.45	.47
Nitrochlorobenzene, 1200 lb drs, wks lb.	...	.15	.15	.16	.15	.16
Nitro-orthotoluidine, 300 lb bbls lb.	2.75	2.85	2.75	2.85	2.75	2.85
Nitrophenol, 185 lb bbls lb.	...	.35	.35	.37	.35	.37
Nitrosodimethylaniline, 120 lb bbls lb.	.92	.94	.92	.94	.92	.94
Nitrotoluene, 350 lb bbls lb.	...	.30	...	.30	.30	.35
Phenylenediamine, 350 lb bbls lb.	1.25	1.30	1.25	1.30	1.25	1.30
Toluenesulfonamide, 175 lb bbls lb.	...	.70	.70	.75	.70	.75
tks, wks lb.	...	.31	...	.31	...	.31
Toluenesulfonchloride, 410 lb bbls, wks lb.	.20	.22	.20	.22	.20	.22
Toluidine, 350 lb bbls, wks lb.	...	.48	.48	.50	.48	.58
Paris Green, dealers, drs lb.	.23	.26	.23	.26	.23	.26
Pentane, normal, 28-38° C, group, 3 tks gal.	...	.08½	...	.08½	...	.08½
drs, group 3 gal.	.11½	.16	.11½	.16	.11½	.16
Perchlorethylene, 100 lb drs, frt all'd lb.	.08	.08½	.08	.08¾	.08	.10½
Petrolatum, dark amber, bbls. lb.	...	.03¼	.03¼	.05	.02⅝	.05
White, lily, bbls lb.	...	.05½	.05½	.08½	.05¼	.08½
White, snow, bbls lb.	...	.06½	.06½	.09½	.06¼	.09½
Petroleum Ether, 30-60°, group 3, tks gal.	...	.13½	...	.13½	.13	.13½
drs, group 3 gal.	.14½	.25½	.14½	.25½	.14	.25½
PETROLEUM SOLVENTS AND DILUENTS						
Cleaners naphthas, group 3, tks, wks gal.	06⅞	.07	.06⅞	.07	.06⅜	.07
East Coast, tks wks gal.	.09	.10½	.09	.10½	.09	.10
Lacquer diluents, tks, East Coast gal.	.09½	.10	.09½	.10	.09	.12½
Group 3, tks gal.	...	.07⅞	...	.07⅞	.07⅜	.08
Naphtha, V.M.P., East tks, wks gal.	.09½	.10	.09½	.10	.09	.10
Group 3, tks, wks gal.	...	.07⅜	.06⅜	.07⅞	.06⅜	.07
Petroleum thinner, 43-47, East, tks, wks gal.	.08¾	.09½	.08¾	.09½	.08½	.10
Group 3, tks, wks gal.	...	.05⅞	.05⅞	.07	.05⅜	.06
Rubber Solvents, stand grd, East, tks, wks gal.	...	.09½	...	.09½	.09	.10
Group 3, tks, wks gal.	.06⅞	.07	.06⅞	.07	.06⅜	.07
Stoddard Solvents, East, tks, wks gal.	.08¾	.09½	.08¾	.09½	.08½	.10
Group 3, wks gal.	.06⅜	.06½	.06⅜	.06½	.05⅞	.06½
Phenol, 250-100 lb drs lb.	.13	.14¾	.13	.14¾	.13	.15½
tks, wks lb.	...	.12	...	.12	.12	.13½
Phenyl-Alpha-Naphthylamine, 100 lb kgs lb.	...	1.35	...	1.35	...	1.35
Phenyl Chloride, drs lb.	...	.17	...	.17	...	.17
Phenylhydrazine Hydrochloride, com lb.	...	1.50	...	1.50	...	1.50
Phloroglucinol, tech, tins lb.	15.00	16.50	15.00	16.50	15.00	16.50
CP, tons lb.	20.00	22.00	20.00	22.00	20.00	22.00

* These prices were on a delivered basis.

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Phosphate Rock, f.o.b. mines					
70% basis .....ton	...	2.15	1.85	1.90	... 1.85
72% basis .....ton	...	2.40	2.15	2.35	... 2.35
Florida Pebble, 68% basis ton	...	1.90	1.90	2.85	... 2.85
75-74% basis .....ton	...	2.90	2.90	3.85	... 3.85
75% basis .....ton	...	5.50	...	5.50	... 5.50
Tennessee, 72% basis..ton	...	4.50	...	4.50	... 4.50
Phosphorus Oxychloride 175 lb cyl .....lb.	.15	.18	.15	.20	.16 .20
Red, 110 lb cases .....lb.	.40	.44	.40	.44	.40 .44
Sesquisulfide, 100 lb cs..lb.	.38	.42	.38	.44	.38 .44
Trichloride, cyl .....lb.	.15	.16	.15	.18	.15 .18
Yellow, 110 lb cs, wks lb.	.18	.20	.18	.20	.24 .30
Phthalic Anhydride, 100 lb drs, wks .....lb.	.14½	.15½	.14½	.15½	... .14½
Pine Oil, 55 gal drs or bbls					
Destructive dist .....lb.	.50	.55	.53	.56	.46 .48
Steam dist wat wh bbls gal.	...	.59	...	.59	... .59
tks .....gal.	...	.54	...	.54	... .54
Pitch Hardwood, wks ...ton	23.75	24.00	23.75	24.00	23.75 24.00
Coaltar, bbl, wks.....ton	...	19.00	...	19.00	... 19.00
Burgundy, dom, bbls, wks lb.	.05½	.06½	.05½	.06½	.05½ .06½
Imported .....lb.	no prices		no prices		.15 .16
Petroleum, see Asphaltum in Gums' Section.					
Pine, bbls .....bbl.	6.00	6.50	6.00	6.50	6.00 6.25
Platinum, ref'd .....oz.	35.00	38.00	35.00	40.00	32.00 40.00
POTASH					
Potash, Caustic, wks, sol..lb.	.06¼	.06¾	.06¼	.06¾	.06¼ .06½
flake .....lb.	.07	.07½	.07	.07½	.07 .07⅜
liquid, tks .....lb.	...	.02⅞	.02⅞	.03¾	... .02⅞
Manure Salts, imported 30% basis, blk .....unit	no prices		...	.58½	... .58½
Potassium Abietate, bbls ..lb	...	.08	.08	.09	... .09
Acetate, tech, bbls, delv lb.	...	.26	...	.26	... .26
Bicarbonate, USP, 320 lb bbls .....lb.	no prices		...	.18	... .18
Bichromate Crystals, 725 lb cks* .....lb.	.08⅞	.09¼	.08¾	.09¼	.08¾ .09¼
Binoxalate, 30 lb bbls ..lb.	...	.23	...	.23	... .23
Bisulfate, 100 lb kgs ...lb.	.15½	.18	.15½	.18	.15½ .18
Carbonate, 80-85% calc 800 lb cks .....lb.	.06½	.06¾	.06½	.07	.06½ .07
liquid, tks .....lb.	...	.0275	.0275	.03	... .02⅞
drs, wks .....lb.	.03	.03⅛	.03	.03½	.03 .03½
Chlorate crys, 112 lb kgs, wks .....lb.	.10½	.17	.10½	.13	.09¼ .13
gran, kgs .....lb.	.12	.14½	.12	.14½	.12 .14½
powd, kgs .....lb.	.10	.17	.10	.12½	.08½ .12½
Chloride, crys, bbls ...lb.	.04	nom.	.04	.04¾	.04 .04¼
Chromate, kgs .....lb.	.24	.27	.24	.27	.19 .28
Cyanide, 110 lb cases...lb.	no prices		no prices		.50 .55
Iodide, 250 lb bbls .....lb.	...	1.35	.	1.35	1.13 1.35
Metabisulfite, 300 lb bbls lb.	nom.	.15	.13	.15	.11 .18
Muriate, bgs, dom, blk unit	...	.53½	.	.53½	. .53½
Oxalate, bbls .....lb.	.25	.26	.25	.26	.25 .26
Perchlorate, kgs, wks...lb.	.09½	.11	.09½	.11	.09 .10½
Permanganate, USP, crys, 500 & 1000 lb drs, wks lb.	.18½	.19	.18½	.19½	.18½ .19½
Prussiate, red, bbls ....lb.	nom.	.45	.38	.45	.30½ .45
Yellow, bbls .....lb.	.15	.16	.15	.16	.14 .16
Sulfate, 90% basis, bgs ton	...	36.25	...	36.25	36.25 38.00
Titanium Oxalate, 200 lb bbls .....lb.	.40	.45	.40	.45	.35 .45
Pot & Mag Sulfate, 48% basis bgs .....ton	no prices		...	24.75	24.75 25.75
Propane, group 3, tks ...lb.	.03¾	.04	.03	.04⅜	.03 .04⅜
Putty, com'l, tubs ...100 lb.	...	3.15	...	6.00	3.00 6.00
Linseed Oil, kgs ...100 lb.	...	5.00	...	4.50	... 4.50
Pyrethrum, conc liq:					
2.4% pyrethrins, drs, frt all'd .....gal.	7.15	7.50	7.15	7.50	5.75 7.50
3.6% pyrethrins, drs, frt all'd .....gal.	10.65	11.00	10.65	11.00	8.45 11.00
Flowers, coarse, Japan, bgs .....lb.	.33	.36	.33	.36	.26 .36
Fine powd, bbls .....lb.	.35	.37	.35	.37	.27 .37
Pyridine, denat, 50 gal drs gal.	...	1.71	...	1.71	1.63 1.71
Refined, drs .....lb.	...	.51	...	.51	.50 .51
Pyrites, Spanish cif Atlantic ports, blk .....unit	.12	.13	.12	.13	.12 .13
Pyrocatechin, CP, drs, tins lb.	2.15	2.40	2.15	2.40	2.15 2.75
Q					
Quebracho, 35% liq tks ..lb.	...	.03½	.03¼	.03½	.02⅞ .03⅜
450 lb bbls, c-l .....lb.	...	.04	...	.04	.04 .04⅛
Solid, 63%, 100 lb bales cif .....lb.	...	.04½	...	.04½	.04 .04½
Clarified, 64% bales .lb.	...	.04¾	...	.04¾	.04¼ .04¾
Quercitron, 51 deg liq, 450 lb bbls .....lb.	.08½	.09½	.08½	.09½	.07½ .08½
Solid, drs .....lb.	.11	.16½	.10	.16½	.10 .12
R					
R Salt, 250 lb bbls, wks lb.	...	.55	...	.55	... .55
Resorcinol, tech, cans ...lb.	.75	.80	.75	.80	.75 .80
Rochelle Salt, cryst .....lb.	.25¾	.26¼	.22¼	.23¼	.17¾ .21¾
Powd, bbls .....lb.	.24¾	.25¼	.21¾	.22¼	.16¾ .20¼
Rosin Oil, bbls, first run gal.	.45	.50	.	.50	.45 .47
Second run .....gal.	.51	.56	.52	.56	.47 .49
Third run, drs .....gal.	.52	.57	.56	.57	.51 .53
Rosins 600 lb bbls, 280 lb unit ex. yard NY:***					
B	...	4.50	4.50	6.25	4.60 5.45
D	...	4.60	4.60	6.25	4.95 5.70
E	...	4.85	4.85	6.55	5.20 6.40
F	...	5.17½	5.17½	6.85	5.50 6.75
G	...	5.17½	5.17½	6.90	5.75 7.00
H	...	5.20	5.20	6.95	5.75 7.10
I	...	5.20	5.20	6.97½	5.77½ 7.20

* Spot prices are ⅛c higher; *** June 29.

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	Current Market	1940 Low	1940 High	1939 Low	1939 High
Rosins (continued)					
K	...	5.22½	5.22½	7.00	5.80	7.20
M	...	5.55	5.55	7.02½	5.90	7.25
N	...	6.00	6.00	7.05	6.75	7.40
WG	...	6.40	6.40	7.12½	6.95	7.70
WW	...	7.05	7.05	7.60	7.45	8.50
Rosins, Gum, Savannah (280 lb unit):**						
B	...	3.10	3.10	4.80	3.25	4.00
D	...	3.20	3.20	4.80	3.55	4.30
E	...	3.50	3.50	5.15	3.80	5.00
F	...	3.77½	3.77½	5.45	4.00	5.35
G	...	3.77½	3.77½	5.50	4.40	5.70
H	...	3.80	3.80	5.55	4.40	5.70
I	...	3.80	3.80	5.57½	4.40	5.80
K	...	3.82½	3.82½	5.60	4.40	5.80
M	...	4.20	4.20	5.62½	4.40	5.85
N	...	4.70	4.70	5.65	5.10	6.00
WG	...	5.00	5.00	5.75	5.60	6.30
WW	...	5.65	5.65	6.20	6.05	7.10
X	...	5.90	5.90	6.20	5.60	7.10
Rosin, Wood, c-l, FF grade, NY	3.25	3.65	3.25	6.95	5.35	6.80
Rotten Stone, bgs mines ton	25.50	37.50	25.50	37.50	22.50	37.50
Imported, lump, bbls...lb.	no prices		...	.14	...	.14
Powdered, bbls .....lb.	no prices		.08½	.10	.08½	.10
S						
Sago Flour, 150 lb bgs..lb.	.04	nom.	.04	.04½	.02½	.04½
Sal Soda, bbls wks...100 lb.	...	1.20	...	1.20	...	1.20
Salt Cake, 94-96%, c-l, bulk wks .....ton	...	17.00	...	17.00	19.00	25.00
Chrome, c-l, wks .....ton	...	16.00	11.00	16.00	11.00	12.00
Saltpetre, gran, 450-500 lb bbls .....lb.	...	.071	...	.071	.06½	.069
Cryst, bbls .....lb.	...	.081	...	.081	.07½	.0865
Powd, bbls .....lb.	...	.081		.081	.07½	.079
Satin, White, pulp, 550 lb bbls .....lb.	.01¼	.01½	.01¼	.01½	.01¼	.01½
Schaeffer's Salt, kgs .....lb.	...	.46	.46	.48	.46	.48
Shellac, Bone dry, bbls..lb. *s*	.25	.26	.25	.26	.18	.26
Garnet, bgs .....lb.	...	.19½	.19	.23	.12½	.20
Superfine bgs .....lb. *s*	.14½	.18	.14½	.20½	.10	.21
T. N., bgs .....lb. *s*	.14	.17	.13½	.19½	.09½	.20
Silver Nitrate, vials .....oz.	...	.26⅞	.26⅞	.27⅜	.26⅞	.33½
Slate Flour, bgs, wks....ton	9.00	10.00	9.00	10.00	9.00	10.00
Soda Ash, 58% dense, bgs, c-l, wks .....100 lb.	...	1.10	...	1.10	...	1.10
58% light, bgs .....100 lb.	1.05	1.08	1.05	1.08	...	1.08
blk .....100 lb.	...	.90	...	.90	...	.90
paper bgs .....100 lb.	...	1.05	...	1.05	...	1.05
bbls .....100 lbs.	...	1.35	...	1.35	...	1.35
Caustic, 76% grnd & flake, drs .....100 lb.	...	2.70	...	2.70	...	2.70
76% solid, drs.....100 lb.	...	2.30	...	2.30	2.10	2.30
Liquid sellers, tks...100 lb.	...	1.95	1.95	1.97½	...	1.97½
Sodium Abietate, drs ....lb.	...	.11	...	.11	...	.11
Acetate, 60% tech, gran. powd, flake, 450 lb bbls wks .....lb.	.04	.05	.04	.05	.04	.05
90%, bbls, 275 lb delv lb.	.06	.06¾	.06	.06¾	...	...
anhyd, drs, delv .....lb.	...	.08½	.09	.08¼	.10	.08¼
Alginate, drs .....lb.	.71	.96	.71	.96	.70	.95
Antimoniate, bbls .....lb.	.14½	.15	.14½	.15	.11½	.16
Arsenate, drs .....lb.	.07	.08¾	.07	.08¾	.08	.08½
Arsenite, liq, drs ....gal.	...	.35	...	.35	.30	.35
Dry, gray, drs, wks..lb.	.06½	.09¼	.06½	.09½	.07½	.09½
Benzoate, USP kgs ...lb.	.46	.50	.46	.52	.46	.48
Bicarb, powd, 400 lb bbl, wks .....100 lb.	...	1.70	1.70	1.85	...	1.85
Bichromate, 500 lb cks, wks* .....lb.	.06⅞	.07¼	.06¾	.07¼	.06¾	.07¼
Bisulfite, 500 lb bbls, wks lb.	.03	.031	.03	.031	.031	.036
35-40% sol bbls,wks 100 lb.	1.40	1.80	1.40	1.80	1.40	1.80
Chlorate, bgs, wks .....lb.	...	.06¼	.06¼	.08½	.06¼	.07½
Cyanide, 96-98%, 100 & 250 lb drs, wks .....lb.	.14	.15	.14	.15	.14	.15
Diacetate, 33-35% acid, bbls, lcl, delv .....lb.	.08½	.09	.08½	.09	...	.09
Fluoride, white 90%, 300 lb bbls, wks .....lb.	.07	.08	.07	.08	.07	.08¾
Hydrosulfite, 200 lb bbls, f.o.b. wks .....lb.	.16	.17	.16	.17	.16	.17
Hyposulfite, tech, pea crys 375 lb bbls, wks 100 lb.	3.05	3.10	2.80	3.05	...	2.80
Tech, reg cryst, 375 lb bbls, wks .....100 lb.	2.45	...	2.45	2.80	2.45	2.80
Iodide, jars ..... lb.	...	2.30	...	2.30	...	2.30
Metanilate, 150 lb bbls..lb	.41	nom.	.41	.42	.41	.42
Metasilicate, gran, c-l, wks .....100 lb.	...	2.35	...	2.35	2.20	2.35
cryst, drs, c-l, wks 100 lb.	...	3.05	...	3.05	2.90	3.05
Monohydrated, bbls ...lb.	...	.023	...	.023	...	.023
Naphthenate, drs .....lb.	.12	.19	.12	.19	.12	.19
Naphthionate, 300 lb bbl lb.	...	.50	...	.50	.50	.54
Nitrate, 92% crude, 200 lb bgs, c-l, NY .....ton	...	28.30	...	28.30	...	28.30
100 bgs, same basis .ton	...	29.00	...	29.00	...	29.00
Bulk .....ton	...	27.00	...	27.00	...	27.00
Nitrite, 500 lb bbls ....lb.	.06¾	.11½	.06¾	.11½	.06¾	.11½
Othochlorotoluene, sulfonate, 175 lb bbls, wks lb.	.25	.27	.25	.27	.25	.27
Orthosilicate, 300 lb drs, c-l .....lb.	...	.03	...	.03	...	.03
Perborate, drs, 400 lb ..lb.	.14¾	.15¼	.14¾	.15¼	.14¾	.15¼
Peroxide, bbls, 400 lb ..lb.	...	.17	...	.17	...	.17

r Bone dry prices at Chicago 1c higher; Boston ½c; Pacific Coast 2c; Philadelphia deliveries f.o.b. N. Y.; refined 6c higher in each case; *s* T. N. and Superfine prices quoted f.o.b. N. Y. and Boston; Chicago prices 1c higher; Pacific Coast 3c; Philadelphia f.o.b. N. Y. *Spot price is ½c higher. **June 28.

	Unit	Current Market	1940 Low	1940 High	1939 Low	1939 High
Sodium (continued):						
Phosphate, di-sodium, tech, 310 lb bbls, wks	100 lb.	...	2.30	...	2.30	2.05	2.30
bgs, wks	100 lb.	...	2.10	...	2.10	1.85	2.10
Tri-sodium, tech, 325 lb. bbls, wks	100 lb.	...	2.45	...	2.45	2.20	2.45
bgs, wks	100 lb.	...	2.25	...	2.25	2.00	2.25
Picramate, 160 lb kgs.	lb.	...	.65	.65	.67	.65	.67
Prussiate, Yellow, 350 lb. bbls, wks	lb.	.09½	.09¾	.09½	.09¾	.09½	.10¾
Pyrophosphate, anhyd, 100 lb bbls f.o.b. wks frt eq	lb.	...	.0530	...	.0530	...	.0530
Sesquisilicate, drs, c-l, wks	100 lb.	...	2.90	...	2.90	2.80	2.90
Silicate, 60°, 55 gal drs, wks	100 lb.	1.40	1.80	1.40	1.80	1.65	1.70
40°, 55 gal drs, wks	100 lb	...	.80	...	.80	...	.80
tks, wks	100 lb.	...	.65	...	.65	...	.65
Silicofluoride, 450 lb bbls NY	lb.	no prices		no prices		.03½	.04¾
Stannate, 100 lb drs	lb.	no prices		.31½	.34½	.30	.35
Stearate, bbls	lb.	.19	.24	.19	.24	.19	.24
Sulfanilate, 400 lb bbls	lb.	.16	.18	.16	.18	.16	.18
Sulfate, Anhyd, 550 lb bgs c-l, wks	100 lb. #	1.45	1.65	1.45	1.90	1.45	1.90
Sulfide, 80% cryst, 440 lb. bbls, wks	lb.	.02¼	.03	.02¼	.03	.02¼	.02½
Solid, 650 lb drs, c-l, wks	lb.	.03	.03¾	.03	.03¾	.03	.03½
Sulfite, cryst, 400 lb bbls, wks	lb.	.023	.0255	.023	.02½	.023	.02½
Sulfocyanide, drs	lb.	.28	.47	.28	.47	.28	.47
Sulforicinoleate, bbls.	lb.	...	.12	...	.12	...	.12
Supersilicate (see sodium sesquisilicate)							
Tungstate, tech, crys, kgs	lb.	no prices		no prices		1.05	1.10
Sorbitol, com, solut, wks c-l, drs, wks	lb.	...	.14¾	.14¾	.16	...	.15½
Spruce, Extract, ord, tks.	lb.	...	.01⅛	...	.01⅛	...	.01⅛
Ordinary, bbls	lb.	...	.01⅛	...	.01⅛	...	.01⅛
Super spruce ext, tks.	lb.	...	.01⅜	...	.01⅜	...	.01⅜
Super spruce ext, bbls.	lb.	...	.01⅞	...	.01⅞	...	.01⅞
Super spruce ext. powd, bgs	lb.	...	.04	...	.04	...	.04
Starch, Pearl, 140 lb bgs	100 lb.	...	2.90	2.50	2.80	2.40	2.85
Powd, 140 lb bgs	100 lb.	...	3.00	2.60	2.90	2.50	2.90
Potato, 200 lb bgs	lb.	.06	.07	.05	.06½	.04	.06¾
Imp, bgs	lb.	no prices		...	.06½	.05	.06½
Rice, 200 lb bbls	lb.	.07½	.08½	.07¼	.08½	.06¼	.07¼
Sweet Potato, 240 lb bbls, f.o.b. plant	100 lb.	nom.	6.00	5.50	6.00	5.50	7.50
Wheat, thick, bgs	lb.	...	.05½	...	.05½	.05	.05½
Strontium, carbonate, 600 lb bbls, wks	lb.	no prices		.22	.23	.16	.24
Nitrate, 600 lb bbls, NY	lb.	.07¾	.08¼	.07¾	.08¼	.07¾	.08¼
Sucrose, octa-acetate, den, grd, bbls, wks	lb.	...	.45	...	.45	...	.45
tech, bbls, wks	lb.	...	.40	...	.40	...	.40
Sulfur, crude, f.o.b. mines	ton	...	16.00	...	16.00	...	16.00
Flour, com'l, bgs	100 lb.	1.60	1.95	1.60	2.35	1.65	2.35
bbls	100 lb.	1.95	2.70	1.95	2.70	1.95	2.70
Rubbermakers, bgs.	100 lb.	...	2.00	2.00	2.80	2.20	2.80
bbls	100 lb.	...	2.35	2.35	3.15	2.55	3.15
Extra fine, bgs	100 lb.	...	2.35	2.85	3.00	2.85	3.00
Superfine, bgs	100 lb.	2.65	2.80	2.65	2.80	2.65	2.80
bbls	100 lb.	2.25	3.10	2.25	3.10	2.25	3.10
Flowers, bgs	100 lb.	3.00	3.75	3.00	3.75	3.00	3.75
bbls	100 lb.	3.35	4.10	3.35	4.10	3.35	4.10
Roll, bgs	100 lb.	...	2.35	2.35	3.10	2.35	3.10
bbls	100 lb.	2.50	3.25	2.50	3.25	2.50	3.25
Sulfur Chloride, 700 lb drs, wks	lb.	.03	.08	.03	.08	.03	.04
Sulfur Dioxide, 150 lb cyl	lb.	.07	.09	.07	.09	.07	.09
Multiple units, wks	lb.	.04½	.07	.04½	.07	.04½	.07
tks, wks	lb.	.04	.06	.04	.06	.04	.05
Refrigeration, cyl, wks	lb.	.16	.40	.16	.40	.16	.17
Multiple units, wks	lb.	.07½	.10	.07½	.10	.07½	.10
Sulfuryl Chloride	lb.	.15	.40	.15	.40	.15	.40
Sumac, Italian, grd	ton	no prices		98.00	140.00	65.50	85.00
Extract, 42°, bbls	lb.	.06	.06¼	.06	.06¼	.05¼	.06¼
Superphosphate, 16% bulk, wks	ton	...	9.00	...	9.00	8.00	9.00
Run of pile	ton	...	8.50	...	8.50	7.50	8.50
Triple, 40-48%, a.p.a. bulk, wks, Balt. unit	ton	...	.70	...	.70	...	.70
T							
Talc, Crude, 100 lb bgs, NY	ton	14.00	16.00	14.00	15.00	13.00	15.00
Ref'd 100 lb bgs, NY	ton	15.25	17.25	14.00	17.25	14.00	16.00
French, 220 lb bgs, NY	ton	no prices		23.00	35.00	23.00	30.00
Ref'd, white bgs, NY	ton	no prices		45.00	60.00	45.00	60.00
Italian, 220 lb bgs to arr	ton	no prices		64.00	70.00	60.00	70.00
Ref'd', white bgs, NY	ton	no prices		65.00	78.00	65.00	70.00
Tankage, Grd, NY	unit ¤	...	2.35	2.35	3.25	2.75	3.25
Ungrd	unit ¤	...	2.35	2.35	3.25	2.75	5.00
Fert grade, f.o.b. Chg	unit ¤	...	2.20	2.20	3.50	2.50	4.50
South American cif	unit ¤	...	2.50	2.50	3.50	3.00	4.00
Tapioca Flour, high grade, bgs	lb.	.03	.05	.02¾	.05	.01¾	.05½
Tar Acid Oil, 15%, drs.	gal.	.22	.24	.22	.24	.21	.24
25% drs	gal.	.25	.27	.25	.28	.25	.28
Tar, pine, delv, drs	gal.	.26	.27	.26	.27	.25	.27
tks, delv, E. cities	gal.	...	.21	...	.21	.20	.21
Tartar Emetic, tech, bbls	lb.	.34¼	nom.	.34¼	.35	.27¼	.35
USP, bbls	lb.	.40	nom.	...	.40	.33	.40
Terpineol, den grade, drs	lb.	...	.17	...	.17	...	.17
Tetrachlorethane, 650 lb drs	lb.	.08	.08½	.08	.08½	.08	.08½
Tetrachlorethylene, drs, tech	lb.	.08	.09	.08	.09½	...	.09½
Tetralene 50 gal drs, wks	lb.	...	.18	.12	.18	.12	.13
Thiocarbanilid, 170 lb bbls	lb.	...	.24	.20	.25	.20	.25

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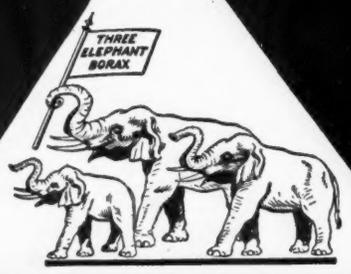

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TENNESSEE CORPORATION
ATLANTA, GA. LOCKLAND, OHIO

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Tin, crystals, 500 lb bbls, wks lb.	no prices	.36	.40½	.35¼	.39
Metal, NY .....lb. *	... .52⅝	.45½	.55	.45½	.60
Oxide, 300 lb bbls, wks lb.	no prices	.51	.53	.50	.54
Tetrachloride, 100 lb drs, wks .....lb.	... .26	.23	.26½	.23	.32
Titanium Dioxide, 300 lb bbls lb.	.13¼ .14	.13	.16	.13¼	.16
Barium Pigment, bbls ..lb.	.05¼ .06½	.05¼	.06½	.05⅝	.06½
Calcium Pigment, bbls lb.	.05¼ .06¼	.05	.06¼	.05⅜	.06½
Titanium tetrachloride, drs. f.o.b. Niagara Falls ....lb.	.32 .45	.32	45	.32	.45
Titanium trichloride 23% sol. bbls f.o.b. Niagara Falls lb.	.22 .26	.22	.26	.22	.26
20% solution, bbls ....lb.	.175 .215	.175	.215	.175	.215
Toluidine, mixed, 900 lb drs, wks .....lb.	... .26	.26	.27	.26	.27
Toluol, 110 gal drs, wks gal.	... .30	.27	.30	...	.27
8000 gal tks, frt all'd gal.	... .25	.22	.25	...	.22
Toner Lithol, red, bbls..lb.	.55 .60	.55	.60	.55	.80
Para, red, bbls .....lb.	.70 .75	.70	.75	.70	.80
Toluidine, bgs .....lb.	... 1.05	1.05	1.35	...	1.35
Triacetin, 50 gal drs, wks, lb.	... .26	...	.26	...	.26
Triamyl Borate, lcl, drs, wks lb.	... .27	...	.27	...	.27
Triamylamine, c-l, drs, wks lb.	... .77	...	.77	.77	1.25
lcl, wks, drs .....lb.	.78 .80	.78	.80	...	...
tks, wks .....lb.	... .75	...	.75	...	...
Tributylamine, lcl, drs, wks lb.	.68 .70	.68	.70	...	.70
c-l, drs, wks .....lb.	... .67	...	.67	...	...
tks, wks .....lb.	... .65	...	.65	...	...
Tributyl citrate, drs, frt all'd lb.	.24 .26	.24	.35	.35	.45
Tributyl Phosphate, frt all'd lb.	... .42	...	.42	...	.42
Trichlorethylene, 600 lb drs, frt all'd E. Rocky Mts lb.	.08 .09	.08	.09	.08	.09½
Tricresyl phosphate, tech, drs, lb.	.22 .36½	.22	.36½	.22	.37½
Triethanolamine, 50 gal drs wks .....lb.	... .19	.19	.22	.21	.22
tks, wks .....lb.	... .18	.18	.20	...	.20
Triethylamine, lcl, drs, f.o.b. wks .....lb.	... 1.05	...	1.05	...	...
Triethylene glycol, drs, wks lb.	... .26	...	.26	...	.26
Trihydroxyethylamine Oleate, bbls .....lb.	... .30	...	.30	...	.30
Stearate bbls .....lb.	... .30	...	.30	...	.30
Trimethyl Phosphate, drs, lcl, f.o.b. dest .....lb.	... .50	...	.50	...	.50
Trimethylamine, c-l, drs, frt all'd E. Mississippi ...lb.	... 1.00	...	1.00	...	1.00
Triphenylguanidine, ...lb.	.58 .60	.58	.60	.58	.60
Triphenyl Phosphate, drs..lb.	... .38	...	.38	...	.38
Tripoli, airfloated, bgs, wks ton	... 26.00	26.00	30.00	26.00	30.00
Turpentine (Spirits), c-l, NY dock, bbls .....gal.	... .32½**	.32½	.40	.29	.35
Savannah, bbls .....gal.	... .26½*	.26½	.34	.23½	.29
Jacksonville, bbls .....gal.	no prices	.26	.34¼	.23½	.26¼
Wood Steam dist, drs, c-l, NY .....gal.	... .27*	.27	.34½	.242	.34
Wood, dest dist, l-c-l, drs, delv E. cities .....gal.	... .30*	.23	.31	.22	.25
U					
Urea, pure 112 lb cases..lb.	... .12	.12	.15½	.14½	.15½
Fert grade, bgs, c. i. f. S.A. points .....ton	no prices	95.00	110.0	95.00	110.00
Dom f.o.b., wks .....ton	... 85.00	85.00	101.00	95.00	101.00
Urea Ammonia, liq., nitrogen basis .....ton	... 121.50	...	121.50	...	...
V					
Valonia beard, 42%, tannin bgs .....ton	.... 56.00	47.00	56.00	45.00	57.00
Cups, 32% tannin bgs..ton	42.00 44.00	33.00	39.00	27.00	39.00
Extract, powd, 63% ...lb.	.0565 nom.	.0565	.06	.05	.06
Vanillin, ex eugenol, 25 lb tins, 2000 lb lots ....lb.	... 2.60	...	2.60	2.20	2.60
Ex-guaiacol .....lb.	... 2.50	...	2.50	2.10	2.50
Ex-lignin .....lb.	... 2.50	...	2.50	2.10	2.50
Vermilion, English, kgs...lb.	no prices	...	2.76	1.50	2.97
W					
Wattle Bark, bgs .....ton	37.50 39.50	34.00	38.75	34.50	40.00
Extract, 60°, tks, bbls..lb.	... .04¼	...	.04¼	.04	.05½
Wax, Bayberry, bgs .....lb.	.22 .23	.25	.30	.16⅞	.39
Bees, bleached, white 500 lb slabs, cases .....lb.	... .35	.35	.38	.33	.40½
Yellow, African, bgs..lb.	.23 .23½	.23	.28	.18½	.30
Brazilian, bgs .....lb.	.24 .24½	.24	.29	.21	.33
Refined, 500 lb slabs, cases lb.	.29 .31	.29	.36	.25½	.36
Candelilla, bgs .....lb.	.18½ .19	.18	.19	.15¼	.19
Carnauba, No. 1, yellow, bgs .....lb.	.69 .69½	.69	.85	.36¾	.78
No. 2, yellow, bgs...lb.	.68 .69	.68	.84	.35¾	.45
No. 2, N. C., bgs ...lb.	.61 .62	.46	.73	.34	.41
No. 3, Chalky, bgs ...lb.	.54 .54½	.43	.66	.27½	.46
No. 3, N. C., bgs ...lb.	.54 .54½	.47	.68	.28¾	.49
Ceresin, dom, bgs .....lb.	.11½ .12	.11½	.15	.08½	.15
Japan, 224 lb cases ....lb.	.15½ .16	.15½	.16½	.09¾	.18
Montan, crude, bgs ....lb.	no prices	no prices		.11	.11¼
Paraffin, see Paraffin Wax.					
Spermaceti, blocks, cases lb.	.22 .23	.22	.25	.18	.25
Cakes, cases .....lb.	.23 .24	.23	.25	.19	.26
Whiting, chalk, com 200 lb bgs, c-l, wks .....ton	16.00 20.00	12.00	20.00	12.00	14.00
Gilders, bgs, c-l, wks..ton	.... 18.00	15.00	18.50	...	15.00
Wood Flour, c-l, bgs ....ton	24.00 25.00	20.00	30.00	20.00	30.00
Xylol, frt all'd, East 10° tks, wks .....gal.	... .30	...	.30	.29	.30
Com'l tks, wks, frt all'd, gal	... .27	...	.27	.26	.27
Xylidine, mixed crude, drs lb.	.35 .36	.35	.36	.35	.36
Zein, bgs, 1000 lb lots, wks .....lb.	... .20	...	.20	...	...

* June 28. ** June 28. ‡ May 31.

		Current Market		1940 Low	1940 High	1939 Low	1939 High
Zinc Acetate, tech, bbls, lcl, delv	lb.	.15	.16	.15	.16	.15	.21
Arsenite, bgs, frt all'd	lb.	...	.12	.12	.12½	.12	.13
Carbonate tech, bbls, NY	lb.	.14	.16	.14	.16	.14	.15
Chloride fused, 600 lb drs, wks	lb.	...	.04¼	.04¼	.046	.04¼	.046
Gran, 500 lb drs, wks	lb.	...	.05	.05	.05¼	.05	.05¼
Soln 50%, tks, wks 100	lb.	...	2.25	...	2.25	...	2.25
Cyanide, 100 lb drs	lb.	...	.33	...	.33	...	.33
Dust, 500 lb bbls, c-l, delv	lb.	...	.08¼	.07½	.08¼	.06½	.08½
Metal, high grade slabs, c-l, NY	100 lb.	...	6.64	5.90	6.64	4.84	6.40
E. St. Louis	100 lb.	...	6.25	4.60	6.25	4.60	6.00
Oxide, Amer, bgs, wks	lb.	.06¼	.07½	.06¼	.07½	.06¼	.07½
French 300 lb bbls, wks	lb.	.06¼	.07½	.06¼	.07¾	.06½	.07¾
Palmitate, bbls	lb.	.24½	.27½	.23	.27½	.23	.25
Resinate, fused, pale bbls	lb.	...	.10	...	.10	...	.10
Stearate, 50 lb bbls	lb.	...	.23	.21½	.24½	.20	.24½
Sulfate, crys, 400 lb. bbls wks	lb.	...	.029	.0275	.029	...	.029
Flake, bbls	lb.	...	.0325	...	.0325	...	.0325
Sulfide, 500 lb bbls, delv	lb.	...	.07¾	.07¾	.08	.07¾	.08⅛
bgs, delv	lb.	...	.07½	.07½	.07¾	.07½	.08⅝
Sulfocarbolate, 100 lb kgs	lb.	.24	.26	.24	.26	.24	.26
Zirconium Oxide, crude, 70-75% grd, bbls, wks	ton	75.00	100.00	75.00	100.00	75.00	100.00

Oils and Fats

Babassu, tks, futures	lb.	nom.	.06	.06	.06⅝	.05⅞	.07⅝
Castor, No. 3, 400 lb drs	lb.	nom.	.12¾	.12	.12¾	.08¼	.12¾
Blown, 400 lb drs	lb.	nom.	.14¾	...	.14¾	.10¼	.14¾
China Wood, drs, spot NY	lb.	.23½	.24½	.22½	.28	.15	.28
Tks, spot NY	lb.	.22½	.23½	.21½	.27	.14½	.27
Coconut, edible, drs NY	lb.	...	.07⅝	.07⅝	.09¾	.08⅛	.10⅓
Manila, tks, NY	lb.	...	.03	.03	.03⅜	.02⅞	.04⅝
Tks, Pacific Coast	lb.	.02⅝	.02¾	.02⅝	.03½	.02⅝	.04⅜
Cod, Newfoundland, 50 gal bbls	gal.	.65	nom.	.65	.72	.29	.72
Copra, bgs, NY	lb.	.0185	.0190	.0165	.0190	.0160	.2625
Corn, crude, tks, mills	lb.	.05½	.05⅝	.05¾	.06½	.05⅛	.07⅛
Refd, 375 lb bbls, NY	lb.	.08¼	.08½	.08½	.09	.07½	.09¾
Degras, American, 50 gal bbls NY	lb.	.08½	.09½	.08½	.10	.07	.10
English, bbls	lb.	.08½	.09½	.08½	.10	.07	.10
Greases, Yellow	lb.	.04⅝	.04¾	.04⅝	.05¼	.03⅞	.06¼
White, choice, bbls, NY	lb.	.05⅛	.05¼	.05⅛	.05⅝	.04½	.07½
Lard, Oil, edible, prime	lb.	...	.09	.09	.10	.09	.11¼
Extra, bbls	lb.	...	.08⅞	.08¾	.09¾	.08	.10⅜
Extra, No. 1, bbls	lb.	...	.08	.08¼	.08⅞	.07¾	.10⅛
Linseed, Raw less than 5 bbl lots	lb.	...	.1040	.1040	.116	.092	.119
bbls, c-l, spot	lb.	.0960	.0980	.0960	.110	.084	.111
Tks	lb.	.090	.092	.092	.104	.078	.104
Menhaden, tks, Baltimore	gal.	.35	nom.	.32	.35	.21	.35
Refined, alkali, drs	lb.	...	.077	.071	.079	.062	.082
Tks	lb.	...	.071	...	.071	.056	.076
Kettle boiled, drs	lb.	...	.089	.089	.093	.074	.094
Light pressed, drs	lb.	...	.071	.071	.075	.056	.076
Tks	lb.	...	.065	.065	.069	.067	.069
Neatsfoot, CT, 20°, bbls, NY	lb.	...	.16¾	.16¾	.19¼	.14¾	.19¾
Extra, bbls, NY	lb.	...	.08	.08	.09	.08	.10⅛
Pure, bbls, NY	lb.	...	.12¼	.12¼	.14¼	.10¾	.16¾
Oiticica, bbls	lb.	.17	.18	.17	.21	.09¼	.21
Oleo, No. 1, bbls, NY	lb.	...	.07½	.07¼	.07¾	.07¼	.12
No. 2, bbls, NY	lb.	...	.07¼	.07	.07½	.06¾	.11¾
Olive, denat, bbls, NY	gal.	...	1.50	.94	1.50	.82	1.40
Edible, bbls, NY	gal.	no prices		1.85	2.00	1.75	2.25
Foots, bbls, NY	lb.	...	.09	.08	.09	.06¾	.10
Palm, Kernel, bulk	lb.	no prices		no prices		.034	.036
Niger, cks	lb.	...	.04½	.04⅜	.05½	.03⅝	.05½
Sumatra, tks	lb.	...	.02½	.03	nom.	.0265	.02¾
Peanut, crude, bbls, NY	lb.	.07¼	.07⅜	.06¾	.07⅜	.06	.08
Tks, f.o.b. mill	lb.	nom.	.05½	.05½	.07⅛	.05¼	.07¼
Refined, bbls, NY	lb.	.08¾	.09	.08¼	.09¾	.08¾	.10¾
Perilla, drs, NY	lb.	.19	nom.	.19	.21	.09½	.16½
Tks, Coast	lb.	.18	nom.	.18½	.20	.089	.15¾
Pine, see Pine Oil, Chem. Sec.							
Rapeseed, blown, bbls, NY	lb.	nom.	.17½	.17	.17½	.14	.17½
Denatured, drs, NY	gal.	1.10	1.15	1.00	1.05	.80	1.05
Red, Distilled, bbls	lb.	.06¾	.07¾	.06¾	.09½	.06¾	.09½
Tks	lb.	.06¼	...	.06¼	.08	.064	.08½
Sardine, Pac Coast, tks	gal.	.38	nom.	.37	.39	.24	.38
Refined alkali, drs	lb.	...	.077	...	.081	.062	.082
Tks	lb.	...	.071	...	.075	.056	.076
Light pressed, drs	lb.	...	.071	...	.075	.056	.076
Tks	lb.	...	.065	...	.069	.05	.07
Sesame, white, dom	lb.	.16	nom.	.11½	.11¾	.09	.12
Soy Bean, crude Dom, tks, f.o.b. mills	lb.	...	.05⅛	.05⅛	.06¼	.04½	.06½
Crude, drs, NY	lb.	.06	.06½	.06	.07¾	.05⅛	.07⅝
Ref'd, drs, NY	lb.	.06⅞	.07⅜	.06⅞	.08½	.06⅜	.09
Tks	lb.	.06⅛	.06⅜	.06⅛	.07⅝	.05¾	.07¾
Sperm, 38° CT, bleached bbls, NY	lb.	...	.11	.105	.11	.09	.103
45° CT, blchd, bbls, NY	lb.	...	.103	.098	.103	.083	.096
Stearic Acid, double pressed dist bgs	lb.	.09¾	.10¾	.09¾	.13	.10	.13½
Double pressed saponified bgs	lb.	.10	.11	.10	.13¾	.10¼	.13¾
Triple pressed dist bgs	lb.	.12½	.13½	.12½	.16½	.12¾	.16½
Stearine, Oleo, bbls	lb.	.06	.06¼	.06	.06½	.05½	.12
Tallow City, extra loose	lb.	nom.	.04¼	.04¼	.05⅜	.04⅜	.07
Edible, tierces	lb.	nom.	.04⅝	.04½	.05¾	.04½	.07¾
Acidless, tks, NY	lb.	...	.07	.07	.08	.07	.09¼
Turkey Red, single, drs	lb.	...	.087	.082	.09	.06	.08⅝
Double, bbls	lb.	...	.11¼	.11	.12¾	.08¾	.11¼
Whale: Winter bleach, bbls, NY	lb.	...	095	...	.095	.075	.095
Refined, nat, bbls, NY	lb.	...	.091	...	.091	.071	.091

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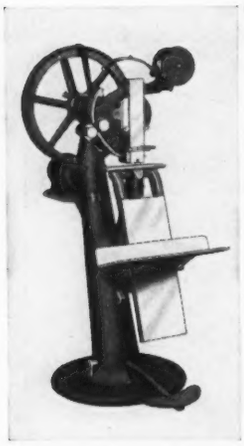

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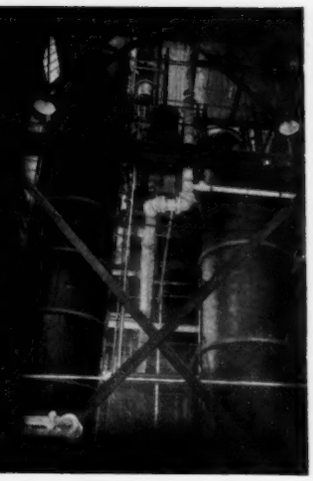

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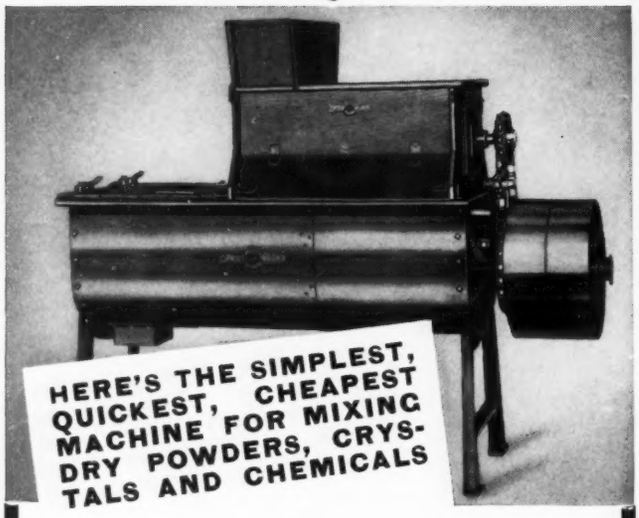

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"We"—Editorially Speaking

We are delighted to report that the Defense Commission fully recognizes the vital role of the chemical industry in plans for placing this country on a better defense basis. The Commission is to be congratulated on its selection of Dr. E. R. Weidlein, director of Mellon, to head up a chemical advisory committee and he in turn is to be congratulated on his selection of E. W. Reid (production) and D. P. Morgan (economics and statistics) as assistants. Both Reid and Morgan are devoting all of their time to this work. Undoubtedly, further additions to this staff will be made.

❖❖❖❖

Russell Kent in his Washington page this month discloses government plans for a tremendous building program of chemical and explosives plants. This means a heavy demand for highly experienced chemists and chemical engineers and while certain of these may be drawn from the ranks of the unemployed, nevertheless, many must come from industrial concerns. The Manufacturing Chemists' Association has performed a real service in conducting surveys of existing manufacturing facilities and this data will prove invaluable. Would it not be highly desirable if our technical organizations and societies performed a somewhat similar service as far as personnel is concerned? A start in mobilizing chemical personnel has been made by the U. S. Civil Service Commission in asking that explosives chemists apply at once for examinations now open for various grades of chemists. Applications must be on file with the United States Civil Service Commission, Washington, D. C., not later than July 15.

❖❖❖❖

Whatever happened to that political platform that was to be short enough to print on a postcard? "We" respectfully suggest the following from the Republican candidate himself:—I believe freedom of economic enterprise results in more efficient business management, in lower prices to the consumer, in more opportunity and better working conditions.

❖❖❖❖

The Chemists' Advisory Council is in desperate need for funds to carry on the worthy work they are doing. While undoubtedly many requests are reaching your desk for this and that worthy charity, we should not forget our own unfortunate chemists and engineers. Won't you mail NOW your check, even if it is but one dollar, to Robert T. Baldwin, treasurer, 60 E. 42d st., N. Y. City.

❖❖❖❖

It is not strange that the term "chemical" is still synonymous with "poison" in the minds of the lay public when they are fed material such as the following taken from the Springfield Ohio, *News-Sun*:

L. A. Raymond, 114, E. Madison ave., is a master fumigator. His life work is handling the deadly cyanide gases which are used in some states to take human lives. In addition, he handles sulfates, phosphates and other chemicals without end, all poisonous enough to kill off everyone in the city of Springfield, but ironically enough, no insurance company will issue a policy on him.

❖❖❖❖

According to a report of the Chemical Division of the U. S. Bureau of Foreign and Domestic Commerce, German property owners in important cities are now compelled to impregnate the roofs of their buildings with flameproofing agents. In the city of Frankfort-on-Main alone the roofs of an additional 50,000 houses and other buildings will be flameproofed by this means as a military measure. Official data show a gain in German sales of flameproofing materials from 365,000 marks in 1935 to almost 1,600,000 in '38 and since the outbreak of hostilities further marked gains have been recorded.

❖❖❖❖

You Must Have At Least One Question

A good friend of "We" reported that A. V. Wilker of National Carbon and F. J. Curtis of Monsanto recently did an exceptionally fine job of telling the Charleston Chemical Engineers Association "What Industry Expects of the Chemical Engineer." We asked Mr. Curtis, when he dropped in for a visit with us in New York, if he would prepare an article on this subject for the readers of "C. I." He reported that in his opinion the question and answer period which followed the prepared speeches was the most interesting part of the meeting and also made what we think is an excellent as well as an unusual suggestion—"Why not let the readers of *Chemical Industries* submit questions in advance?"

So consider this a cordial invitation to send in any questions that come to mind. With a representative set of questions we know that Mr. Curtis will give us a hum-dinger of an article, straight from the shoulder and with no punches pulled. Simply address your questions to the Editor, Chemical Industries, 522 5th ave., N. Y. City.

❖❖❖❖

Don't forget to mail at once your check to your local Red Cross Chapter. It will help to bring food, clothing and medical supplies to the millions who are helpless in war-stricken Europe. "Give according to your means," asked the President in his recent fireside chat, "in the name of a common humanity."

❖❖❖❖

Our subscription manager has just burst into the editorial sanctum with the good news that we have shown an uninterrupted monthly net gain for the past 14 issues. To our new readers a hearty welcome.

Fifteen Years Ago

From our files of July, 1925

General Dyestuff Corporation, which was formed in March, takes over H. A. Metz & Co., Consolidated Color & Chemical Co., and Central Dyestuff & Chemical Co. B. A. Ludwig, formerly vice president of National Aniline joins new organization as vice president.

Charles J. Brand has been selected as executive secretary and treasurer of the new National Fertilizer Association.

The sessions of the Chemical Equipment Exposition at Providence last week were attended by more than two hundred executives of the A. I. Ch. E., A. C. S. and Amer. Assn. of Textile Chemists and Colorists.

American Pharmaceutical Manufacturers' Association re-elects J. H. Foy as president at annual meeting at Greenbrier Hotel, White Sulphur Springs, W. Va.

The sale price of the Alsace potash mines, recently taken over by the French Government, was 208 million francs.

The Viscose Co. announces plans for rayon plant at Parkersburg to cost $5,000,000.

Niacet Chemical Corporation, recently organized to manufacture synthetic acetic acid, has purchased ten acre plot at Niagara Falls and will erect $250,000 plant.

5/20/40

State of Chemical Trade

Current Statistics (June 30, 1940)—p. 61

WEEKLY STATISTICS OF BUSINESS

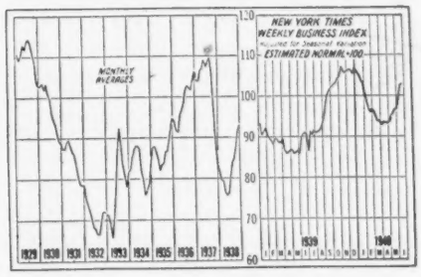
Week Ending	Carloadings 1940	Carloadings 1939	Carloadings % of Change	Electrical Output* 1940	Electrical Output* 1939	Electrical Output* % of Change	Jour. of Com. Price Index	Nat'l Chem. & Drugs	Fertilizer Fats & Oils	Ass'n Fert. Mat.	Price Indices Mixed Fert.	Price Indices All Groups	†Labor Dept. Chem. & Drug Price Index	% Steel Activity	N. Y. Times Index Bus. Act.	Fisher Commodity Index
June 1....	639,126	563,309	+13.5	2,332,216	2,113,887	10.3	79.3	95.0	46.1	72.2	77.4	75.6	77.8	80.3	96.7	83.2
June 8....	702,571	630,060	+11.5	2,452,995	2,256,823	+ 8.7	79.1	95.0	45.9	69.8	77.4	75.1	77.4	84.6	98.8	82.7
June 15....	712,445	633,955	+12.4	2,516,208	2,264,719	+11.1	78.8	95.0	46.5	69.8	77.3	74.9	77.4	87.7	102.4	83.0
June 22....	728,096	638,534	+14.0	2,508,825	2,285,083	+ 9.8	78.5	95.0	46.6	69.5	77.3	74.6	77.1	86.5	102.8	82.3

* K.W.H. 000 omitted. † 1926-1928 = 100.00.

MONTHLY STATISTICS

CHEMICAL:	May 1940	May 1939	April 1940	April 1939	March 1940	March 1939
Acid, sulfuric (expressed as 50° Baumé, short tons, Bureau of the Census)						
Total prod. by fert. mfrs.	191,643	155,902	192,846	145,689	196,290	169,952
Consumpt. in mfr. fert.	143,742	108,889	140,272	112,593	149,303	119,081
Stocks end of month	89,282	90,137	94,820	90,458	93,231	94,529
Alcohol, Industrial (Bureau Internal Revenue)						
Ethyl alcohol prod., proof gal..	20,953,298	18,655,386	20,217,860	17,857,461	20,983,157	17,438,065
Comp. denat. prod., wine gal ..	784,466	695,327	267,687	240,918	413,609	504,865
Removed, wine gal.	704,597	597,659	230,577	184,314	403,640	480,384
Stocks end of mo., wine gal...	458,262	608,836	378,239	511,723	340,798	456,116
Spec. denat. prod., wine gal. ..	9,252,869	7,794,973	9,726,116	7,477,594	9,110,798	7,110,718
Removed, wine gal.	9,332,216	7,605,163	9,562,558	7,338,850	9,094,261	7,097,868
Stocks end of mo., wine gal...	1,127,594	1,157,130	1,212,438	972,979	1,051,625	837,796
Ammonia sulfate prod., tons *a*..	57,697	33,064	54,570	39,635	56,059	46,670
Benzol prod., gal. *b*	10,375,000	5,456,000	9,588,000	6,813,000	9,952,000	8,063,000
Byproduct coke prod., tons *a*...	4,243,809	2,396,435	3,984,347	2,914,660	3,037,336	1,705,874
Cellulose Plastic Products (Bureau of the Census)						
Nitrocellulose sheets, prod., lbs.	544,352	755,527	532,327	802,067	789,307	917,274
Sheets, ship., lbs.	645,921	626,647	561,119	663,460	607,267	818,229
Rods, prod., lbs.	188,938	221,139	245,078	255,918	231,297	311,893
Rods, ship., lbs.	222,296	259,152	231,937	238,098	255,511	290,064
Tubes, prod., lbs.	67,056	59,539	74,649	58,420	69,036	85,841
Tubes, ship., lbs.	58,211	54,017	55,106	48,521	61,739	62,749
Cellulose acetate, sheets, rod, tubes						
Production, lbs.	702,385	490,684	558,358	508,264	550,138	1,077,560
Shipments, lbs.	648,535	508,786	490,206	522,346	588,516	1,029,302
Molding comp., ship.; lbs. ..	837,151	704,085	903,785	599,609	1,021,579	809,718
Methanol (Bureau of the Census)						
Production, crude, gals.	436,883	354,415	441,888	389,423	506,937	364,500
Production, synthetic, gals.	3,408,517	1,778,581	3,486,233	2,276,385	3,462,946	2,406,564
Pyroxylin-Coated Textiles (Bureau of the Census)						
Light goods, ship., linear yds...	2,639,599	2,652,199	2,859,620	2,642,840	2,793,435	3,108,289
Heavy goods, ship., linear yds...	1,875,376	2,106,754	2,146,261	1,933,597	2,184,457	2,396,423
Pyroxylin spreads, lbs. *c*	4,102,401	4,726,511	4,772,332	4,642,742	4,769,189	5,401,941
Exports (Bureau of Foreign & Dom. Commerce)						
Chemicals and related prod. *d*..	.....	$15,000	$15,929	$14,658	$18,780	$12,552
Crude sulfur *d*	.....	$600	$1,517	$979	$419	$756
Coal-tar chemicals *d*	.....	$1,088	$1,995	$989	$2,539	$961
Industrial chemicals *d*	.....	$2,467	$4,175	$2,354	$4,467	$2,261
Imports						
Chemicals and related prod. *d*..	.....	$15,000	$6,063	$19,000	$6,681	$6,888
Coal-tar chemicals *d*	.....	$1,062	$905	$4,129	$1,113	$1,122
Industrial chemicals *d*	.....	2,524	$1,046	$2,202	$1,108	$1,459
Employment (U. S. Dept. of Labor, 3 year av., 1923-25 = 100) Adjusted to 1937 Census Totals						
Chemicals and allied prod., including petroleum	121.1	112.9	123.4	116.6	122.6	116.0
Other than petroleum	120.9	111.7	123.9	116.4	122.9	115.7
Chemicals	136.2	116.5	135.2	117.0	135.6	118.6
Explosives	118.0	85.6	114.0	84.3	107.8	84.9
Payrolls (U. S. Dept. of Labor, 3 year av., 1923-25 = 100) Adjusted to 1937 Census Totals						
Chemicals and allied prod., including petroleum	133.7	119.6	133.4	119.5	132.5	120.6
Other than petroleum	132.8	115.7	132.3	116.7	131.5	117.3
Chemicals	162.0	131.3	159.6	130.2	159.3	133.3
Explosives	141.2	95.6	133.1	93.8	128.8	95.9
Price index chemicals*	.....	.....	85.0	84.6	85.1	84.8
Drugs & Pharmaceuticals* ...	.....	.....	81.8	77.4	81.4	77.7
Fert. mat.*	.....	.....	70.7	68.1	70.6	68.0
Paint and paint mat.	.....	.....	86.7	81.3	87.2	81.5
FERTILIZER:						
Exports (long tons, Nat. Fert. Association)						
Fertilizer and fert. materials ...	.....	.....	.....	136,328	60,332	123,687
Ammonium sulfate	.....	.....	.....	208	8,265	1,199
Total phosphate rock	.....	.....	.....	111,181	31,691	90,738
Total potash fertilizers	.....	.....	.....	5,710	637	17,102
Imports (long tons, Nat. Fert. Association)						
Fertilizer and fert. materials ...	.....	.....	.....	189,213	181,636	142,430
Ammonium sulfate	.....	.....	.....	10,685	6,920	14,179
Sodium nitrate	.....	.....	.....	115,188	86,039	42,920
Total potash fertilizer	.....	.....	.....	16,580	40,094	17,235

INDUSTRIAL TRENDS



Business: Business and industrial activity made sharp gains during past month and continues to gain. Federal Reserve Board's index of industrial production increased in May from 102 to 105, and is likely to rise to 120 for July. Activity in carloadings and electric production were particularly strong and registered contra-seasonal gains. Price indexes have declined somewhat.

Steel: Production in steel industry has risen to a high rate. In May the industry operated at 72 per cent of capacity, an increase of 18 per cent. over the operating rate of 61 per cent. in April and 23.4 per cent. over May, 1939. By the third week of June, 1940, operations had reached 88 per cent. Business booked in June ran substantially ahead of volume for May. For some companies the increase has amounted to between 40 and 50 per cent. Trade observers believe that new business, which is coming from industry generally does not necessarily represent actual manufacturing needs.

Concern that was expressed after French capitulation was apparently ill-founded. It appears that French orders do not bulk more than 500,000 tons, whereas American mills are turning out over a million tons of steel each week. The industry would lose a total of three days production if all orders were cancelled. However, the British are assuming some of these orders.

Electric Output: The active rate in power production has continued. Average increase over last year continues at about 10%. For week ended June 29, production amounted to 2,514,461,000 kwh. against 2,300,268,000 kwh. in like 1939 period, an increase of 9.3%.

State of Chemical Trade
Current Statistics (June 30, 1940)—p. 61

State of Chemical Trade

Current Statistics (June 30, 1940)—p. 62

Carloadings: Continuing recent wide gains revenue freight loadings have advanced contra-seasonally. At same time, recent high loadings totals were reflected in net operating income for first of 35 railroads to report for May, an increase of 83.2% over the like 1939 month and 36.2% over April 1940. While it is unusual for traffic to rise during the summer months it is believed that if pressure for exports to Great Britain and general domestic activity persists, loadings will continue to rise or at least maintain present high level.

Automotive: The seasonal decline has set in for the automobile industry. Production has decreased from 432,746 units in April to an estimated 349,000 in June. According to present indications, a halt in production will come early in July. A relatively long shutdown for model changeover—probably seven to eight weeks for most plants—will then follow, during which the assembly plants will prepare not only for 1941 cars but for whatever tooling can be done on national defense orders.

Textiles: Activity in woolen textile industry rose sharply in May from low level reached in April. At cotton mills activity was maintained at about same rate. Rayon production continued large, while mill takings of silk declined to lowest level in nearly twenty years.

Retail Trade: Retail trade throughout the nation is holding close to last year's best level. All types of merchandise are participating in the gains, which are most pronounced in leading industrial centers.

Outlook: Business and industrial activity continues to improve. The new lease on life, that was probably initiated and stimulated by the European war, will probably be sustained by our own optimistic business prospects and growing defense preparations.

Demand for steel is now reported to be in excess of the industry's capacity. Backlogs of machinery, electrical equipment, and machine tool producers are rising steadily. Demand for rail equipment, which has been relatively light, is now picking up. All of these facts indicate that industrial plants are nearing capacity operations before defense orders are actually being filled. As a result, a large volume of plant construction or shifts from consumers' to capital goods will be necessary if the forthcoming defense orders are to be promptly accomplished. The actual placing of these orders is gathering momentum rapidly and should reach large proportions within next month.

MONTHLY STATISTICS (cont'd)

	May 1940	May 1939	April 1940	April 1939	March 1940	March 1939
FERTILIZER: (Cont'd)						
Superphosphate e (Nat. Fert. Association)						
Production, total	.....	223,439	288,308	236,703	296,798	255,223
Shipments, total	.....	532,795	853,623	807,405	594,321	607,094
Northern area	.....	372,593	362,601	344,146	165,041	184,525
Southern area	.....	160,202	491,022	463,259	429,280	422,569
Stocks, end of month, total	.....	825,238	1,200,321	1,079,891	1,739,663	1,615,376
Tag Sales (short tons, Nat. Fert. Association)						
Total, 17 states	.....	390,982	1,183,033	1,276,336	1,639,766	1,581,205
Total, 12 southern	.....	312,313	1,125,397	1,232,279	1,538,065	1,478,041
Total, 5 midwest	.....	78,669	57,636	44,057	101,701	103,164
Fertilizer employment *i*	.....	113.2	174.5	176.6	151.8	145.7
Fertilizer payrolls *i*	.....	108.2	136.2	135.7	112.7	104.4
Value imports, fert. and mat. *d*	.....	$3,479	$3,152	$4,370	$3,737	$3,291
GENERAL:						
Acceptances outst'd'g *f*	$213	$246	$223	$237	$229	$245
Coal prod., anthracite, tons	3,955,000	5,073,000	3,746,000	3,227,000	3,773,000	3,604,000
Coal prod., bituminous, tons	35,468,000	17,927,000	32,962,000	10,747,000	35,400,000	35,438,000
Com. paper outst'd'g *f*	$234	$188	$238	$191	$233	$191
Failures, Dun & Bradstreet	1,238	1,334	1,291	1,331	1,197	1,322
Factory payrolls *i*	96.4	85.0	96.3	85.5	98.2	87.6
Factory employment *i*	99.0	93.0	99.6	94.1	100.8	94.3
Merchandise imports *d*	.....	$202,502	$212,240	$186,296	$216,732	$190,416
Merchandise exports *d*	$316,874	$246,119	$324,008	$230,974	$352,272	$268,364
GENERAL MANUFACTURING:						
Automotive production	391,215	297,542	432,746	337,375	423,299	371,946
Boot and shoe prod., pairs	29,261,910	32,708,118	31,056,156	33,058,064	34,550,750	37,484,294
Bldg. contracts, Dodge *j*	$328,914	$308,487	$300,504	$330,030	$272,178	$300,661
Newsprint prod., U. S. tons	90,207	85,872	86,277	77,393	85,143	79,929
Newsprint prod., Canada, tons.	323,563	250,015	268,947	220,843	251,279	220,648
Glass containers, gross‡	4,700	4,516	4,584	4,071	4,606	4,128
Plate glass prod., sq. ft.	11,720,547	8,035,800	12,366,500	7,268,100	14,302,978	11,866,817
Window glass prod., boxes	1,068,231	728,653	1,023,465	738,951	1,107,437	912,301
Steel ingot prod., tons	4,841,403	3,295,164	3,974,706	3,352,774	4,236,050	3,814,013
% steel capacity	72	48.64	61.04	51.11	63	56.3
Pig iron prod., tons	3,513,683	1,923,618	3,137,019	2,302,918	3,270,499	2,681,969
U.S. cons'pt. crude rub., lg. tons	51,619	45,484	50,103	44,166	.....	50,165
Tire shipments	.....	.....	.....	4,356,000	4,351,657	4,564,794
Tire production	.....	.....	.....	4,211,000	5,031,153	5,091,006
Tire inventories	.....	.....	.....	9,998,000	10,836,239	9,962,917
Cotton consumpt., bales	.....	605,363	623,893	543,187	626,331	649,940
Cotton spindles oper.	.....	21,975,222	22,301,218	22,122,902	22,555,036	22,503,480
Silk deliveries, bales	.....	.....	.....	21,802	21,685	37,863
Wool consumption *s*	.....	29.8	21.4	27.7	26.7	30.9
Rayon deliv., lbs.	.....	.....	.....	23,100,000	29,500,000	26,500,000
Hosiery (all kinds) *t*	.....	9,090,063	8,091,697	8,678,567	8,641,929	10,586,102
Rayon employment *i*	304.3	295.7	305.8	302.4	309	303.8
Rayon payrolls *i*	311.4	273.0	311.1	278.6	316	286.9
Soap employment *i*	81.4	78.1	81.2	78.7	82.7	80.6
Soap payrolls *i*	98.0	93.9	98.0	94.9	99.5	96.2
Paper and pulp employment *i*	115.2	106.7	112.0	106.3	112.6	105.9
Paper and pulp payrolls *i*	124.3	105.6	115.4	104.7	115.1	105.6
Leather employment *i*	80.8	83.3	82.7	85.8	84.0	87.3
Leather payrolls *i*	76.8	78.7	78.2	81.4	80.4	85.2
Glass employment *i*	103.9	97.4	105.3	97.8	106.2	96.4
Glass payrolls *i*	110.9	96.3	114.2	93.8	112.8	100.0
Rubber prod. employment *i*	84.1	81.2	84.7	82.1	87.3	82.8
Rubber prod. payrolls *i*	87.1	80.0	86.5	81.0	88.4	83.2
Dyeing and fin. employment *i*	122.6	123.7	125.4	125.6	128.1	127.3
Dyeing and fin. payrolls *i*	99.2	103.3	104.7	106.3	108.7	110.7
MISCELLANEOUS:						
Oils & Fats Index (26=100)[1]	57.0	56.0	59.2	55.3	59.9	56.7
Gasoline prod. *p*	.....	.....	.....	48,837	51,230	58,367
Cottonseed oil consumpt., bbls.	.....	.....	293,705	251,004	257,924	307,053
PAINT, VARNISH, LACQUER, FILLERS:						
Sales 680 establishments	.....	$41,853,977	$37,656,398	$33,999,205	$31,592,093	$32,888,357
Trade sales (580 establishments)	.....	$25,436,932	$20,188,957	$18,862,040	$16,144,606	$17,656,955
Industrial sales, total	.....	$12,578,360	$13,849,723	$11,843,829	$12,639,821	$12,112,220
Paint & Varnish, employ. *i*	125.9	123.4	124.3	122.5	123.5	119.7
Paint & Varnish, payrolls *i*	136.0	129.8	131.9	125.6	130.5	122.7

a Bureau of Mines; *b* Crude and refined plus motor benzol, Bureau of Mines; *c* Based on 1 lb. of gun cotton to 7 lbs. of solvent, making an 8-lb. jelly; *d* 000 omitted, Bureau of Foreign & Domestic Commerce; *e* Expressed in equivalent tons of 16% A.P.A.; *f* 000,000 omitted at end of month; *i* U. S. Dept. of Labor, 3 year average, 1923-25 = 100, adjusted to 1937 census totals; *j* 000 omitted, 37 states; *p* Thousands of barrels, 42 gallons each; *q* 680 establishments, Bureau of the Census; *r* Classified sales, 580 establishments, Bureau of the Census; *s* 53 manufacturers, Bureau of the Census; *t* 387 identical manufacturers, Bureau of the Census, quantity expressed in dozen pairs; *v* In thousands of bbls., Bureau of the Census; ** Indices, Survey of Current Business, U. S. Dept. of Commerce; *z* Units are millions of lbs.; ‡ 000 omitted; * New series beginning March, 1940; [1] Revised series beginning February, 1940.

Corn Products' Net Near $1.50

While profit margins for Corn Products Refining Co. in the second quarter this year were lower than normal, the volume of the business increased so substantially that it is probable that the earnings for the first half year were close to the dividend payments of $1.50 a share.

Favorable Report for Johns-Manville

Aided by increased demand for its building and industrial products, operations of Johns-Manville Corp. in the second quarter probably were the most successful since 1937. In the June quarter of that year, the company had a net profit of $1,789,415, equal to $1.95 a share on the common stock.

General Aniline Earns $5.38

Report of General Aniline & Film Corp. and subsidiaries (formerly American I. G. Chemical Corp.) for year ended December 31, 1939, shows net income of $4,463,601 including $1,177,813 net profit on sale of securities, and after interest, minority interest, federal income taxes, etc., equal under the participating provisions of the shares, to $5.38 a share on 529,693 no-par shares of Class A common and 54 cents a share on 3,000,000 shares (par $1) of Class B common stocks. Company's fiscal year has been changed to end December 31, from March 31.

Chemical Companies Expected to Maintain High Earnings

Business of the chemical industry generally during the June quarter has fully maintained the excellent rate set by sales in the March period, with the likelihood that final figures will show a gain over the latter three months. Moreover, increased industrial demand arising out of the national defense program is expected to keep activity on the upgrade during the summer months.

Judging from the sales picture, June quarter statements of the principal chemical companies appear likely to make extremely favorable showings. E. I. du Pont is expected to report around $2.30 a share for the period, including 90 cents a share from General Motors dividends and $1.40 from chemical operations. This would compare with $2.04 earned in the March quarter, including 67 cents from Motors and $1.37 from chemicals, and with $1.73 in the June, 1939, quarter including 67 cents from Motors and $1.06 from chemicals.

Hercules Powder Co., with business running close to March quarter levels, will probably show around $1.20 a share or more for the three months to June 30, compared with $1.22 reported for the first three months.

Activity in the steel industry and in general metal consuming industries has increased earnings of Air Reduction sharply in the current quarter, with indications that profits may run around 65 cents a share, against 53 cents earned in the March quarter, and 47 cents in the June, 1939, quarter.

Union Carbide, with an even larger stake in the steel industry where both ferro-alloys and oxygen are gaining in consumption, should also show better profits for the June quarter, probably around $1.20 a share, against $1.13 for the first quarter.

Carbide's business in synthetic organic chemicals, including its new range of vinyl plastics and resins, is growing rapidly and a major new plant development to use refinery gases as raw material is now under way in Texas.

American Cyanamid is expected to show 60 to 65 cents a share for the June quarter, against 62 cents earned in the first three months.

Dividends and Dates

Name	Div.	Stock Record	Payable
Chemical Fund, Inc. q.	7c	June 30	July 15
Commercial Alcohols, pf., q.	10c	June 29	July 15
Corn Products Refining q.	75c	July 5	July 20
pf., q.	$1.75	July 5	July 15
Dow Chemical Co.	75c	Aug. 1	Aug. 15
pf., q.	$1.25	Aug. 1	Aug. 15
Ferro Enamel Corp.	25c	July 16	Aug. 1
Monsanto Chemical Co., pf., A & B, semi-an.	$2.25	Nov. 9	Dec. 2
National Distillers Products q.	50c	July 15	Aug. 1
New Jersey Zinc Co.	50c.	June 28	July 15
Westvaco Chlorine Products q.	35c	July 10	Aug. 1
pf., q.	37½c	July 10	Aug. 1
West Virginia Pulp & Paper, 6% pf., q.	$1.50	July 25	Aug. 15
c.	10c	June 10	July 1

Earnings Statements Summarized

Company:	Annual dividends	Net income 1940	Net income 1939	Common share earnings 1940	Common share earnings 1939	Surplus after dividends 1940	Surplus after dividends 1939
Celotex Corp:							
April 30 quarter	*f* $...	$77,469	$22,536	$.06	$*p*.77	.....	.....
Six months, April 30	*f* ...	†117,396	10,400	....	*p*.35	.....	.....
General Aniline & Film Corp.:							
Year, December 31	*ya* 3.50; *yb* .35	4,463,601	.....	*a* 5.38; *b*.54	....	.....	.....
International Petroleum Co., Ltd.:							
Twelve months, Dec. 31	1.50	17,290,474	*....	1.19	*...	.....	.....
Eighteen months, Dec. 31	1.50	27,797,059	*....	1.91	*...	.....	.....
U. S. Industrial Alcohol:							
March 31, quarter	*f* ...	‡222,429	*....	....	....	.....	.....
U. S. Smelting, Ref. & Mining:							
Five months, May 31	*y* 5.50	1,944,031	1,145,804	2.39	.88	.....	.....

a On first preferred stock; *b* On second preferred stock; *c* On combined Class A and Class B shares; *d* Deficit; *f* No common dividend. *j* On average number of shares; *k* For the year 1939; *p* On preferred stock; *y* Amount paid or payable in 12 months to and including the payable date of the most recent dividend announcement; ‡ Indicated quarterly earnings as shown by comparison of company's reports for the 6 and 9 months periods; § Plus extras; *n* Preliminary statement; *h* On shares outstanding at close of respective periods; ** Indicated quarterly earnings as shown by comparison of company's reports for 1st quarter of fiscal year and the six months period. ‡‡ Indicated earnings as compiled from quarterly reports. † Net loss. * Not available.

Price Trend of Representative Chemical Company Stocks

	June 1	June 8	June 15	June 22	Net gain or loss last mo.	Price June 24 1939	1940 High	1940 Low
Air Reduction Co.	39	38	40¾	40	+ 1	51½	58⅛	36½
Allied Chemical & Dye	142	140½	148¾	152½	+10½	165	182	135½
Amer. Agric. Chem.	14	15½	15	14⅛	+ ⅛	25	21	12⅛
Amer. Cyanamid "B"	30⅝	32	33⅝	33⅜	+ 2¾	17½	39⅞	26
Columbian Carbon	72	71¾	73½	80	+ 8	90½	98¾	71
Commercial Solvents	9	8¾	9¾	9⅛	+ ⅛	10⅛	16⅝	8
Dow Chemical Co.	140	147	154	160	+20	119	171	137
Du Pont	156	152	162	161¾	+ 5¾	149¾	189¼	146½
Hercules Powder	81	82	85½	86	+ 5	72	100½	76¼
Mathieson Alkali	23½	22½	24¼	25¾	+ 2¼	25	32¾	21
Monsanto Chem. Co.	89¼	89	92	92⅞	+ 3⅝	99	119	86¾
Standard Oil of N. J.	30⅜	35⅛	36⅛	33⅞	+ 3½	42⅝	46½	29⅞
Texas Gulf Sulphur	29½	27½	30¾	30⅜	+ ⅞	28⅜	35¾	26⅞
Union Carbide & Carbon	63¼	62¾	68⅞	70	6¾	78⅞	88⅜	59⅞
U. S. Industrial Alcohol	15⅝	15¾	18½	18½	2⅝	15¾	28	14

Monsanto Earns $1.23

The report for the first three months of this year of the Monsanto Chemical Company shows a net operating income of its American companies of $1,642,037, after all charges and taxes equal to $1.23 each on the 1,241,694 common shares.

Manufacturers' Orders Up 11%

New orders received by manufacturers during May showed an 11% gain over April, while inventories rose a trifle and shipments held unchanged, the National Industrial Conference Board reports.

The following table shows the Conference Board index numbers and the percentage changes from April and from May, 1939:

	May 1940	April 1940*	May 1939	Percentage change from April 1940	Percentage change to May 1940 from May 1939
Inventories	131	130	111	+ 1	+18
New Orders	112	101	90	+11	+24
Shipments	111	111	92	....	+21

* Revised.

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Chemical Stocks and Bonds

June 1940 Last	June 1940 High	1939 Low	1939 High	1938 Low	1938 High	Sales	Stocks	Par $	Shares Listed	Dividends	Earnings** $-per-share-$ 1939	1938	1937
						Number of shares							
NEW YORK STOCK EXCHANGE						June 1940	1940						
57	70¼	50	71½	53	61	46¼ 5,100	27,500	Abbott Labs.	No	752,468	$2.05	2.61	2.43	2.51
9¼	58⅛	36½	68	45¼	67⅞	40 22,100	182,400	Air Reduction	No	2,563,992	1.50	1.98	1.47	2.86
148	182	135½	200½	151½	197	124 14,100	73,300	Allied Chem & Dye	No	2,214,099	9.00	9.50	5.92	11.19
14¼	21	12⅛	24½	16	28½	22 3,800	24,400	Amer. Agric. Chem	No	627,987	1.30	1.22	2.23	2.95
4½	8¼	4⅛	11⅞	5½	15	9 2,000	41,900	Amer. Com. Alcohol	No	280,934	....	—.40	—2.05	3.23
25	35½	23	37	21	31½	20 1,900	12,200	Archer-Dan.-Midland	No	545,416	1.10	3.02	.43	5.03
61½	80½	57	71	50	68	36 700	13,900	Atlas Powder Co.	No	250,288	3.00	3.82	2.69	4.40
113⅛	124¾	112½	127	116	126¼	105 370	2,610	5% conv. cum. pfd.	100	68,597	5.00	18.94	14.77	20.90
26½	35½	20	30¼	13⅝	26⅝	9 49,000	518,800	Celanese Corp. Amer.	No	1,000,000	.50	3.53	.26	2.04
114½	119	105½	109⅞	84	96	82 1,400	21,500	prior pfd	100	164,818	7.00	37.72	15.05	27.07
11⅞	20	10⅛	18	11½	17	7⅛ 31,800	331,900	Colgate-Palm.-Peet	No	1,962,087	1.00	2.74	1.77	—.35
81	98¾	71	96	73	98½	53¾ 2,600	17,300	Columbian Carbon	No	537,406	4.50	5.32	5.13	8.31
9	16⅝	8	16	8⅝	12¼	5⅞ 63,200	662,500	Commercial Solvents	No	2,636,878	....	.61	—.11	.60
49½	65⅛	44½	67½	54⅞	70¾	53 12,800	110,900	Corn Products	25	2,530,000	3.00	3.32	3.18	2.52
170	179	165	177	150	177	162 500	3,800	7% cum. pfd.	100	245,738	7.00	41.18	39.69	32.96
13	23¼	12½	32⅜	18	40⅞	25 1,400	16,040	Devoe & Rayn. A.	No	95,000	....	2.05	—1.72	4.05
154	171	137	144⅝	101½	141	87⅞ 6,100	51,400	Dow Chemical	No	1,034,988	3.00	3.76	3.91	4.15
158	189¼	146½	188½	126¼	154¾	90½ 53,300	240,600	DuPont de Nemours	20	11,065,762	7.00	7.70	8.74	7.37
121½	126	114	124⅜	112	120½	109½ 3,700	35,450	4½% pfd.	No	1,688,850	4.50	52.25	57.27	165.48
120¾	166¾	117	186⅛	133⅛	187	121½ 16,400	97,300	Eastman Kodak	No	2,476,013	6.00	8.55	7.54	9.76
160	178	155	183½	155½	173	157 200	1,190	6% cum.	100	61,657	6.00	349.31	261.22	362.45
30½	38¾	24¾	36	18¼	32	19⅞ 14,800	130,900	Freeport Sulphur	10	796,380	1.50	2.76	1.87	3.30
7	10	5½	10⅞	7	12⅛	6⅝ 2,100	28,900	Gen. Printing Ink	1	735,960	.80	.94	.63	1.32
12½	19¾	11	24½	14	28½	13 4,800	71,500	Glidden Co.	No	829,989	.50	1.70	—.39	2.62
36	44⅝	30	47	34	51½	37 400	5,600	4½% cum. pfd.	50	199,940	2.25	4.27	1.08	12.72
90	113¼	89⅞	112¼	93	111	76¾ 1,700	10,700	Hazel Atlas	25	434,409	5.00	6.64	4.97	6.67
84½	100½	76¼	101½	63	87	42¾ 7,800	62,600	Hercules Powder	No	1,316,710	2.85	3.65	1.96	2.97
130	133½	127⅝	135½	128½	135¼	126¾ 280	3,590	6% cum. pfd.	100	96,194	6.00	60.87	35.31	59.75
22½	29	16⅜	29½	16¾	30⅜	14⅜ 5,800	56,300	Industrial Rayon	No	759,325	.75	1.77	.34	.34
24	47⅜	22	46¼	17½	34½	15 2,700	47,800	Interchem.	No	290,320	.40	4.10	.33	1.44
98½	113	91	109½	90	98	80 410	4,460	6% pfd.	100	65,661	6.00	24.27	7.39	12.26
1⅜	2⅛	1	3⅝	1½	3⅞	2 3,400	43,000	Intern. Agricul.	No	436,048	....	—1.32	—0.003	.16
23	38	18⅛	41	16	29	15 700	11,900	7% cum. pfd.	100	100,000	....	1.26	7.01	7.70
23	38⅞	19⅜	55¾	33	57⅝	36⅞ 93,600	540,900	Intern. Nickel	No	14,584,025	2.00	2.39	2.09	3.31
31½	37⅛	26⅞	38	29	30¼	19½ 500	7,100	Intern. Salt	No	240,000	1.75	1.92	2.29	2.11
16½	23¾	14⅜	22½	14½	24	19⅛ 2,600	10,700	Kellogg (Spencer)	No	509,213	1.10	1.39	.71	2.81
35	53⅜	30	56¾	36½	58⅜	23¼ 19,000	117,200	Libbey Owens Ford	No	2,513,258	2.75	3.21	1.57	4.19
12⅞	18⅛	10⅛	19	13½	21½	12⅛ 5,300	67,400	Liquid Carbonic	No	700,000	1.00	1.62	1.81	2.37
25	32¾	21	37⅝	20¾	36⅞	19¾ 6,900	72,000	Mathieson Alkali	No	828,171	1.50	1.12	1.01	1.81
92	119	86¾	114¾	85¾	110	67 14,800	90,600	Monsanto Chem.	No	1,241,816	3.00	4.01	2.35	4.40
116½	118	110	121	110	117½	111 720	2,400	4½% pfd. A.	No	50,000	4.50	54.29	31.51	49.99
117½	121½	113½	122½	112	...	... 420	1,740	4½% pfd. B.	No	50,000	4.50	54.29	31.51	49.99
17	22½	14⅛	27½	17⅞	31	17⅛ 17,000	180,600	National Lead	10	3,095,100	.87	1.28	.75	.96
165	173⅜	160	173¼	152	178½	154 400	3,900	7% cum. "A" pfd.	100	213,793	7.00	27.04	20.03	22.86
133½	148½	132	145	132	145½	127 110	1,960	6% cum. "B" pfd.	100	103,277	6.00	55.30	35.97	43.77
7⅛	14¼	6⅛	17¾	8½	19½	9⅞ 14,800	141,200	Newport Industries	1	620,459	....	.66	—.06	2.22
48½	64⅝	42	70	50	76¼	40 12,400	97,100	Owens-Illinois Glass	12.50	2,661,204	2.00	3.17	2.02	3.51
61¾	71¾	53	66	50⅝	59	39½ 20,400	130,000	Procter & Gamble	No	6,325,087	2.25	3.80	3.59	4.05
115½	118½	112½	119¾	112	122¼	114 490	5,830	5% pfd.	100	169,517	5.00	298.55	101.81	167.05
8½	13⅛	7⅝	17¼	9⅞	18⅜	10 12,000	125,300	Shell Union Oil	No	13,070,625	.50	.77	.70	1.44
98	108½	95¼	107⅞	98½	106½	93 500	8,000	5½ cum. pfd.	100	341,000	5.50	34.61	33.18	60.59
13⅜	23¼	12¼	29½	15½	34¾	18½ 11,400	44,700	Skelly Oil	No	995,349	.75	1.99	2.27	6.07
22⅞	29	20¾	30	22¾	35½	24¾ 61,200	357,400	S. O. Indiana	25	15,272,020	1.25	2.24	1.82	3.16
33	46½	29⅞	53½	38	58⅜	39¾ 140,900	650,700	S. O. New Jersey	25	26,618,065	1.25	3.27	2.86	5.64
5¼	7	4¼	9⅛	4	8	3⅞ 7,100	68,200	Tenn. Corp.	5	853,696	....	.41	.46	1.09
38⅜	47⅝	33	50⅜	32½	49⅝	37⅝ 53,300	441,000	Texas Corp.	25	10,876,882	2.00	3.02	2.13	5.02
30⅝	35¾	26⅞	38½	26	38	26 19,000	116,800	Texas Gulf Sulphur	No	3,840,000	2.00	2.04	1.81	3.03
68⅛	88⅜	59⅞	94¼	65½	90⅞	57 56,000	289,000	Union Carbide & Carbon	No	9,277,288	1.90	3.86	2.77	4.81
45¼	65⅝	42½	69½	52	73½	39 12,100	32,300	United Carbon	No	397,885	3.00	3.81	3.78	5.91
18	28	14	29⅝	13½	30¼	13½ 7,700	87,600	U. S. Indus. Alcohol	No	391,238	....	.20	—1.08	1.24
30¾	43⅞	25	40	16	28⅞	11¼ 91,000	395,200	Vanadium Corp. Amer.	No	377,140	1.00	3.25	.61	2.22
23½	31½	19	29¾	18¼	25¼	13½ 1,400	20,100	Victor Chem.	5	696,000	1.40	1.59	1.05	1.01
2⅛	4⅛	1¾	5¾	2½	5⅝	2¾ 2,500	42,300	Virginia-Caro. Chem.	No	486,122	....	—1.57	—1.86	—.05
16¾	31¾	14	33¾	17	32½	15¾ 3,400	29,900	6% cum. part. pfd.	100	213,053	....	2.41	1.90	5.88
32	38½	27¾	39¼	15¼	20¼	10 2,400	35,100	Westvaco Chlorine	No	339,362	1.85	2.81	1.52	1.46
33½	39¼	28⅞	39½	29	31½	20 3,400	18,800	cum. pfd.	30	192,000	1.50	6.64	4.19	4.09
NEW YORK STOCK EXCHANGE														
33½	39⅞	26	35⅝	18⅜	30¼	15½ 43,800	368,500	Amer. Cyanamid "B"	10	2,618,387	.60	2.07	.91	2.09
113	127	98	112⅜	76	92	50 1,800	16,400	Celanese, 7% cum. 1st pfd.	100	148,179	7.19	34.17	8.95	22.32
3	5⅞	2⅜	6⅜	3	6¾	3 300	7,300	Celluloid Corp.	15	194,952	....	—.70	—2.73	—.93
7	7¾	7	7⅞	4½	12	6½	700	Courtauld's Ltd.	£1	24,000,000	.13	4.92%	.26%	8.64%
5⅜	8⅛	5¼	9¼	5	9⅞	6 800	13,500	Duval Texas Sulphur	No	500,000	....	1.25	.71	.43
70	92	60	68	30	41¼	27 825	14,500	Heyden Chem. Corp.	100	125,497	2.00	5.98	2.07	3.94
78	104	65	117	90	115½	55 8,400	40,300	Pittsburgh Plate Glass	25	2,192,824	4.00	4.94	3.00	8.53
75	100	62½	113½	81	117¾	66 3,400	30,100	Sherwin Williams	25	638,927	2.75	5.96	2.43	8.76
108⅜	114¾	106	116	106½	114⅛	107 230	1,910	5% cum. pfd.	50	132,189	5.00	35.08	8.76	45.50
PHILADELPHIA STOCK EXCHANGE														
160	185	158¾	179	135	167	121½ 175	2,510	Pennsylvania Salt	50	150,000	6.00	10.52	6.29	11.79

June 1940 Last	June 1940 High	1939 Low	1939 High	1938 Low	1938 High	Sales	Bonds	Date Due	Int. %	Int. Period	Outstanding $
NEW YORK STOCK EXCHANGE						June 1940 1940					
102¼	105¼	100⅛	103¾	98	105⅜	99⅛ 275,000 1,070,000	Amer. I. G. Chem. Conv.	1949	5½	M-N	$22,400,000
29½	41	28	41½	19	38	25⅛ 18,000 717,000	Anglo Chilean Nitrate inc. deb.	1967	4½	J	10,400,000
105⅝	107½	105½	108⅜	101⅝	106⅛	102⅝ 5,000 192,000	Dow Chemical	1951	3	J-D	5,000,000
105	106	100	102½	90	94	93 49,000 854,000	Industrial Rayon	1948	4½	J-J	7,100,000
30¼	39¾	28	37	21½	35⅝	24¾ 31,000 958,000	Lautaro Nitrate inc. deb.	1975	4	J-D	27,200,000
21	21	21	30	16	35⅝	24¾ 5,000	Ruhr Chem.	1948	6	A-O	1,500,000
96¼	97¾	93½	95⅝	88¾	...	... 307,000 4,099,000	Shell Union Oil	1954	2½	J-J	85,000,000
104½	106⅜	101⅛	106¼	97⅜	105⅝	100 474,000 1,747,000	Standard Oil Co. (New Jersey) deb.	1961	3	J-D	85,000,000
104¾	106⅜	100⅝	106½	94¼	103	98 303,000 1,625,000	Standard Oil Co. (New Jersey) deb.	1953	2¾	J-J	50,000,000
103⅞	108	103¼	108⅝	102	103	95 277,000 1,600,000	Texas Corp.	1951	3½	J-J	60,000,000
105¼	106¾	102	105⅞	95¼	...	... 420,000 2,105,000	Texas Corp.	1959	3	A-O	40,000,000

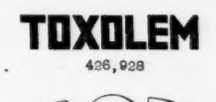
* Paid in 1939, including extras but excluding dividends paid in stock.

** For either fiscal or calendar year.

New Trade Marks of the Month

427,090

421,138



426,928

427,703

426,805

425,900

426,298

417,534

426,674

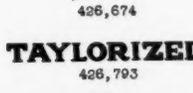
427,626

426,604

417,535

426,839

405,126



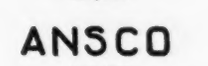
426,793

427,840

426,976

419,747

426,902



427,889

360,332

426,925

426,730

421,542

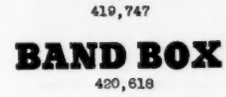
425,575

427,001

426,202

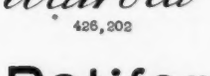
418,732

427,160



420,618

427,002



413,898

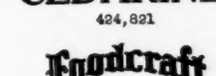
425,810

414,795

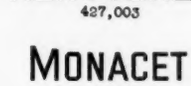
424,821

427,003

426,643

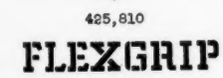


425,314

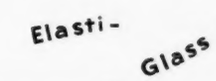


427,049

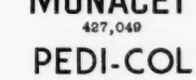
427,080



425,948



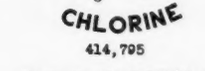
421,482



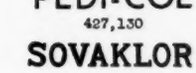
427,130

427,656

427,144



426,808



427,175

Trade Mark Descriptions †

427,090. The Sodiphene Co., Kansas City, Mo.; Jan. 2, 1940; for antiseptic germicide. Since Nov. 11, 1922.

425,900. Nutrition Research Laboratories, Inc., Chicago, Ill.; Nov. 22, 1939; for concentrated vitamin B_1. Since Nov. 1, 1939.

426,839. Robert C. Long, Coast Agricultural Fertilizer Co., Pasadena, Calif.; Dec. 22, 1939; for plant fertilizer. Since Apr. 1, 1939.

426,976. General Printing Ink Corp., New York, N. Y.; Dec. 29, 1939; for printing ink. Since June 29, 1939.

360,332. United States Gypsum Co., Chicago, Ill.; Jan. 17, 1935; for asphalt roofing. Since Jan., 1934.

421,542. The Silex Co., Hartford, Conn.; July 13, 1939; for tea makers. Since May 26, 1939.

418,732. National Lead Co., New York, N. Y.; Apr. 26, 1939; for lead and lead alloys. Since 1912.

425,810. Silverstein & Pinsof, Inc., Chicago, Ill.; Nov. 18, 1939; for zinc base slushing alloys. Since Jan. 1, 1935.

425,948. The Barrett Co., New York, N. Y.; Nov. 25, 1939; for coal tar paint. Since Oct. 7, 1939.

427,144. The Sherwin-Williams Co., Cleveland, Ohio; Jan. 4, 1940; for paints, paint fillers, undercoaters, and primers. Since May 1, 1939.

421,138. General Motors Corp., Detroit, Mich.; June 30, 1939; for oil metering plugs and similar devices made from metal powders. Since Jan. 2, 1937.

426,298. Hawaiian Pineapple Co., Ltd., Honolulu, Hawaii, and San Francisco, Calif.; Dec. 6, 1939; for canned fruits and fruit juices. Since March 17, 1910, on canned fruit; since Nov. 2, 1939, on canned fruit juices.

426,604. Coffee X Corp., New York, N. Y.; Dec. 15, 1939; for molding compound for plastic compositions. Since Nov. 22, 1939.

405,126. Marie R. Miller (The Walter W. Miller Co.), Indianapolis, Ind.; Apr. 11, 1938; for metal cleaning material. Since Feb. 23, 1938.

425,575. Lano Co., Chicago, Ill.; Nov. 13, 39; for powdered hand soap. Since Aug. 3, '39.

427,160. Masury-Young Co., Charlestown, Mass.; Jan. 5, 1940; for cleaning and polishing preparation for terrazzo and marble surfaces. Since Sept. 15, 1939.

414,795. Michigan Alkali Co., Wyandotte, Mich.; Jan. 13, 1939; for chlorine. Since first part of 1939.

426,808. Gum Laboratories, Inc., Clifton Heights, Pa.; Dec. 21, 1939; for gum containing a non-poisonous peroxide compound adapted to whiten the teeth. Since Nov. 20, 1939.

426,928. Marguerite J. Morgan (New Health Products Co.), East Aurora, N. Y.; Dec. 27, 1939; for laxative. Since Dec. 15, 1939.

417,534. The Globe Chemical Co., Inc., Cincinnati, Ohio; Mar. 27, 1939; for chemicals. Since 1895.

417,535. The Globe Chemical Co., Inc., Cincinnati, Ohio; Mar. 27, 1939; for chemicals and solvents. Since Oct. 11, 1938.

419,747. The Embalmers' Supply Co., Westport, Conn.; May 24, 1939; for embalming supplies. Since Aug. 1, 1896.

420,618. The Band Box Corp., St. Louis, Mo.; June 17, 1939; for supplies and accessories for dry cleaning. Since Jan., 1930.

424,821. O-Cedar Corp., Chicago, Ill.; Oct. 23, 1939; for insecticides. Since Oct. 10, 1939.

425,314. United Buyers Corp. (Foodcraft Products), Chicago, Ill.; Nov. 6, 1939; for lye, bluing, ammonia, clothes bleach, and washing soda. Since Sept. 1, 1935.

421,482. S. Buchsbaum & Co., Chicago, Ill.; July 22, 1939; for leather substitute. Since July 1, 1939.

427,703. The Dandro-Nox Co., Inc., Baltimore, Md.; Jan. 22, 1940; for cosmetics. Since Dec. 7, 1939.

426,674. Ira I. Solomon, Long sland City, N. Y.; Dec. 16, 1939; for hat sizing. Since Dec. 9, 1939.

426,793. Richard W. Taylor (R. W. Taylor & Co.), Plymouth, Mass.; Dec. 20, 1939; for compound for imparting a water repellent and wear resisting finish for knitted and woven textiles. Since Dec. 11, 1939.

426,902. Jeff I. Rubel (J. L. R. Chemical Co.), Okolona, Miss.; Dec. 26, 1939; for pile salve. Since Oct. 1, 1939.

426,925. Duke Laboratories, Inc., Stamford, Conn.; Dec. 27, 1939; for emollient or ointment having healing and protective qualities. Since Aug. 21, 1936.

427,001. Alrose Chemical Co., Cranston, R. I.; Dec. 30, 1939; for compositions used as finishing agents for textile fibers.

427,002. Alrose Chemical Co., Cranston, R. I.; Dec. 30, 1939; for compositions used as detergents for textiles. Since Apr. 1, 1937.

427,003. Alrose Chemical Co., Cranston, R. I.; Dec. 30, 1939; for wetting agents. Since Jan. 1, 1935.

427,049. United Drug Co., Boston, Mass.; Dec. 30, 1939; for analgesic and antipyretic tablet. Since Nov. 9, 1939.

427,130. Burrows Pharmacal & Chemical Co., Inc., Albany, N. Y.; for medicinal preparation. Since Feb. 1, 1939.

427,175. Socony Paint Products Co., New York, N. Y.; Jan. 5, 1940; for paste and ready-mixed paints. Since Dec. 4, 1939.

426,805. The B. F. Goodrich Co., New York, N. Y., and Akron, Ohio; Dec. 21, 1939; for tubular metal rivets. Since Oct. 6, 1935.

427,626. Haas-Miller Corp., Philadelphia, Pa.; Jan. 19, 1940; for compound used for textile scouring. Since Sept. 14, 1938.

427,840. Geigy Co., Inc., New York, N. Y.; Jan. 25, 1940; for chemicals adapted for moth-proofing of fibers and fabrics. Since Jan. 20, 1940.

427,889. General Aniline & Film Corp., Binghamton, N. Y.; Jan. 26, 1940; for chemicals and preparations and compounds thereof used in photographic processes. Since July 1, 1902.

426,730. Hood Products Corp., New York, N. Y.; Dec. 19, 1939; for fertilizers. Since Dec. 6, 1939.

426,202. Industrial Research Laboratories, Ltd., Los Angeles, Calif.; Dec. 4, 1939; for pipe joint sealing composition. Since July 27, 1932.

413,898. Deutsche Röhrenwerke A. G., Dusseldorf, Germany; Dec. 16, 1938; for

† Trademarks reproduced and described include those appearing in *U. S. Patent Digest*, Feb. 27, 1940, and April 2 to April 9, 1940.

New Trade Marks of the Month

LIOB
426,677

427,083

LYOBILE
427,560

TERVAN
427,601

M H
427,824

CLARITE
428,403

HERCULES RED DOT
428,077

ALLCOTE
425,542

424,762

HANDEEZ

424,544

424,985

ALKAZENE
424,389

427,039

429,099

429,144

427,915

Amylgestin
428,038

Quinothesin
428,047

BENBUTANE
428,280

Aunt Phoebe's
428,603

SULAMYD
428,887

DAREX
428,611

SARAVIT
428,888

KOLOFOG
428,925

THANITE
428,960

SULFATINIC
428,976

VAPODOR
429,005

JELIDENT
429,083

WARCOLUX
429,110

SKALOL
429,169

NU-A-GAN
425,863

WIREX
428,402

WINTROL
429,170

HYLASTIC
401,214

CAPSTIX
428,416

THERMOGRAVURE
408,604

GULF
428,690

RIMACOLITE
427,854

DUR-X
428,653

CERLOX
427,880

KOROSEALED
427,935

(Trade Mark Descriptions Continued)

anti-rust steel, steel sheets and plates of anti-rust steel. Since Jan. 29, 1938.

426,643. Coppercote, Inc., New York, N. Y.; Dec. 16, 1939; for flexible and resilient rubber base paints and paint coatings. Since Sept. 22, 1939.

427,080. Luber-Finer, Inc., Los Angeles, Calif.; Jan. 2, 1940; for filtering medium. Since Dec. 22, 1939.

427,656. Brace Process Corp., New York, N. Y.; Jan. 20, 1940; for machines for filtering, cleansing and reclaiming of oil, and filters therefore. Since Dec. 1, 1938.

426,677. American Druggists Syndicate, Inc., Long Island City, N. Y.; Oct. 19, 1939; for drugs. Since Sept. 27, 1939.

427,083. McCoy's Products, Inc., New York City; Jan. 2, 1940; for cod liver oil tablets. Since Dec. 1, 1939.

427,560. Sharp and Dohme, Inc., Philadelphia, Pa.; Jan. 17, 1940; for drugs. Since Dec. 20, 1939.

427,601. Standard Oil Company of N. J., Wilmington, Del.; Jan. 18, 1940; for waxes for chemical, medicinal and pharmaceutical purposes, and petroleums. Since Dec. 11, 1939.

427,824. Sinclair Refining Company, New York City; Jan. 24, 1940; for insecticides. Since Dec. 22, 1939.

428,403. The Neville Company, Neville Island, Pittsburgh, Pa.; Feb. 9, 1940; for resinous media for mounting histological and the like sections for microscopic study. Since Aug. 22, 1939.

428,077. Hercules Powder Company, Wilmington, Del.; Jan. 31, 1940; for propellent powder for shotguns, rifled arms, etc. Since May 14, 1934.

425,542. Allied Materials Corporation, Oklahoma City, Okla.; Nov. 13, 1939; for emulsified asphalt and asphalt compositions. Since Jan. 15, 1939.

424,762. Chromium Mining & Smelting Corp., Hamilton and Sault Ste. Marie, Ontario, Canada; Oct. 21, 1939; for exothermic metallurgical chrome alloying materials. Since Sept. 9, 1939.

424,544. The C. B. Dolge Co., Westport, Conn.; Feb. 14, 1940; for soap. Since Jan. 15, 1940.

424,985. The American Products Co., Cincinnati, Ohio; Oct. 28, 1939; for adhesives. Since Nov. 1, 1934.

424,389. The Dow Chemical Co., Midland, Mich.; Oct. 10, 1939; for alkylated benzene and alkylated chloro- and bromo-benzene compounds. Since Oct., 1938.

427,039. Numol, Ltd., Newcastle-on-Tyne, Eng.; Dec. 30, 1939; for ointment for skin ailments. Since 1893.

429,099. Harry D. Nicholaou, Baltimore, Md.; March 1, 1940; for insecticide. Since Nov. 6, 1939.

429,144. Turco Products, Inc., Los Angeles, Calif.; March 2, 1940; for compounds for prevention and removal of rust, water scale and corrosion from heat exchange and similar equipment. Since March 13, 1936.

427,915. West Disinfecting Co., Long Island City, N. Y.; Jan. 26, 1940; for germicides and insecticides. Since Apr. 19, 1932.

428,038. McNeil Laboratories, Inc., Philadelphia, Pa.; Jan. 30, 1940; for digestive ferment preparation. Since Jan. 30, 1930.

428,047. McNeil Laboratories, Inc., Philadelphia, Pa.; Jan. 30, 1940; for prophylactic and antiseptic preparation. Since Feb. 13, 1930.

428,280. W. H. Cook Co., Watertown, N. Y.; Feb. 6, 1940; for anesthetic ointment. Since Dec. 20, 1939.

428,603. Beacon Chemical Corp., Philadelphia, Pa.; Feb. 16, 1940; for ammonia for household use and bluing. Since Feb. 8, 1940.

428,887. Schering Corp., Bloomfield, N. J.; Feb. 24, 1940; for chemical compound to be used in treatment of bacterial infections. Since Feb. 16, 1940.

428,611. Dewey and Almy Chemical Co., Cambridge, Mass.; Feb. 16, 1940; for chemicals, particularly insecticides and insecticidal pastes and containing sulfur. Since May 8, 1939.

428,888. Schering Corp., Bloomfield, N. J.; Feb. 24, 1940; for laxative preparation. Since Feb. 16, 1940.

428,925. Niagara Sprayer and Chemical Co., Inc., Middleport, N. Y.; Feb. 26, 1940; for insecticidal composition for use on plants. Since March 6, 1931.

428,960. Hercules Powder Co., Wilmington, Del.; Feb. 27, 1940; for active chemical ingredient for use in manufacture of insecticides. Since Jan. 29, 1940.

428,976. E. R. Squibb & Sons, New York, N. Y.; Feb. 27, 1940; for preparations of chemo-therapeutic agents to be administered internally for combatting pathogenic micro-organisms. Since Feb. 20, 1940.

429,005. The Selig Co., Atlanta, Ga.; Feb. 28, 1940; for deodorants. Since Dec. 26, 1939.

429,083. American Druggists Syndicate, Inc., Long Island City, N. Y.; March 1, 1940; for dentrifrice. Since Jan. 31, 1940.

429,110. Warwick Chemical Co., West Warwick, R. I.; March 1, 1940; for chemical product used for dyeing and finishing for all fibers, yarns, and fabrics as well as leather and paper. Since Feb. 1, 1940.

429,169. California Spray-Chemical Corp., Wilmington, Ded., and Richmond, Calif.; March 4, 1940; for parasiticides. Since 1927.

425,863. Soil-Off Manufacturing Co., Glendale, Calif.; Nov. 21, 1939; for polisher and refinisher for wood. Since May 15, 1939.

428,402. The Neville Co., Neville Island, Pittsburgh, Pa.; Feb. 9, 1940; for solvents for use in enamels and the like coating compositions. Since Dec. 30, 1939.

429,170. California Spray-Chemical Corp., Wilmington, Del., and Richmond, Calif.; March 4, 1940; for parasiticides. Since 1921.

401,214. The General Tire & Rubber Co., Akron, Ohio; Dec. 24, 1937; for tire cord. Since Oct. 13, 1937.

428,416. Atlas Powder Co., Wilmington, Del.; Feb. 10, 1940; for primers for explosives. Since Oct. 4, 1939.

408,604. Interchemical Corp., New York, N. Y.; July 18, 1938; for intaglio ink. Since June 28, 1938.

428,690. Gulf Oil Corp., Pittsburgh, Pa.; Feb. 19, 1940; for petroleum and its products. Since Nov. 20, 1901.

427,854. Rinshed - Mason Co., Detroit, Mich.; Jan. 25, 1940; for casein paint. Since Feb. 6, 1939.

428,653. Nathan K. Morris (The Kitchen Gadget Mfg. Co.), Asbury Park, N. J.; Feb. 17, 1940; for knives made of glass and juice extractors made of plastic material. Since 1925.

427,880. Cercla, Inc., Chicago, Ill.; Jan. 26, 1940; for binding devices made of plastic material. Since Jan. 18, 1940.

427,935. The B. F. Goodrich Co., New York, N. Y., and Akron, Ohio; for fabrics impregnated and/or coated with a synthetic composition having rubber-like characteristics. Since Dec. 29, 1939.

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A Complete Check—List of Products, Chemicals, Process Industries

Cellulose

Xanthate of cellulose glycollic acid. No. 2,201,663. Deane C. Ellsworth, deceased by Joseph F. Haskins and Ferdinand Schulze to E. I. du Pont de Nemours & Co., Inc.

Production of self-sustaining moisture proof pellicles of an organic acid ester of cellulose. No. 2,201,747. Ambrose W. Staudt to E. I. du Pont ne Nemours & Co., Inc.

Cellulosic product and process for producing same. No. 2,202,003. Joseph F. Haskins to E. I. du Pont de Nemours & Co.

Cellulose derivative composition taken from class consisting of cellulose ethers and carboxylic acid esters having incorporated therein a salt of dimethyl phosphoric acid. No. 2,202,124. Harold J. Tattersall to Imperial Chemical Industries, Ltd.

Method dissolving cellulose acetate comprises contacting cellulose acetate with mixture of a nitroparaffine and a monohydric aliphatic alcohol containing 1 to 4 C. atoms No. 2,202,804. Herbert L. Wampner and Charles Bogin to Commercial Solvents Corp.

Process for the manufacture of transparent foils, films, and threads of cellulose formate. No. 2,203,596. Walter Konig to Rudolph Koepp & Co.

Fibrous acetone-soluble cellulose acetate of 58-60% acetyl content. No. 2,203,699. George W. Seymour and Blanche B. White to Celanese Corp. of America.

Preparation of cellulose esters of high acyl value. No. 2,203,700. George W. Seymour and Blanche B. White to Celanese Corp. of America.

Process for manufacture cellulose acetate of high acetyl value. No. 2,203,748. George W. Seymour and Blanche B. White to Celanese Corp. of America.

Stabilizing organic esters of cellulose of high acyl value. No. 2,203,749. George W. Seymour and Blanche B. White to Celanese Corp. of America.

Cellulose etherification process. No. 2,203,869. Frederick C. Hahn to E. I. du Pont de Nemours & Co.

Preservation of fibrous cellulosic material. No. 2,204,066. Ernest R. Boller to E. I. du Pont de Nemours & Co.

Chemical Specialty

Process for producing white cement. No. 2,201,143. Otto Schwachheim.

Fused carbide composition essentially of boron carbide and a difficultly fusible carbide of a group consisting of vanadium, columbium and tantalum carbides. Nos. 2,201,150-151. John A. Boyer and Carl G. Rose, to The Carborundum Co.

Improvement in manufacture of gelatin comprising use of non-tertiary amine containing no negative group and an alkaline earth metal halide. No. 2,201,168. John Vernon S. Glass to Imperial Chemical Industries, Ltd.

Solid lubricant comprising water insoluble metal soap of thickened fixed oil and polar non-polar material of high molecular weight having sufficient hydrocarbon groups to be substantially insoluble in water and sufficient hydroxyl groups to be substantially insoluble in petroleum solvents. No. 2,201,217. Herman E. Ballard.

Catalyst, process of producing same and process of employing said catalyst in hydrogenation reactions. No. 2,201,235. Charles W. Lenth and Robert N. Du Puis to Association of American Soap and Glycerine Producers, Inc.

Pressure lubricant composed of oleaginous lubricant and 1-5% oil soluble compound containing at least one C atom attached directly to both N and S. No. 2,201,258. Warren F. Busse to The B. F. Goodrich Co.

Mold composition comprising graphite particles, dehydrated clay and a binder. No. 2,201,366. Vladimir A. Grodsky.

Asphalt and process for producing the same. No. 2,201,396. Paul J. Fryar to Union Oil Co, of California.

Process making impervious or fixing pervious or loose sub-soil layers, such as sand, consists in causing aqueous dispersion of bituminous substance to penetrate the soil and thereafter causing said dispersion to coagulate. No. 2,201,459. Jan van Hulst to The Patent and Licensing Corp.

Lubricating composition improved with respect to oiliness and simultaneously with respect to corrosivity comprising a lubricating oil containing an ester of a polyhydric alcohol having 3 to 6 C. atoms per molecule and an organic acid. No. 2,201,484. Bruce B. Farrington and Robert L. Humphreys to Standard Oil Co. of Calif.

Photographic processing. No. 2,201,591. Gabriel Garcia Moreno to CMC Corp.

Preparation lubricants, comprises subjecting a mercaptan-containing hydrocarbon to action of solution consisting of water and 2-20% caustic soda. No. 2,201,607. Robert E. Burk to The Standard Oil Co. of Ohio.

Process comprises subjecting aqueous starch suspension to acid conversion to produce a liquor having dextrose equivalent analysis 25-55%, and subjecting said liquor to action of saccharifying fungus enzyme to produce a syrup. No. 2,201,609. Julian K. Dale and David P. Langlois to A. E. Staley Mfg. Co.

Combustion process as applied to vapor generation. No. 2,201,627. Walter D. La Mont to W. D. La Mont, Inc.

Edge sealing for sponge rubber. No. 2,201,669. Herman T. Kraft to The General Tire & Rubber Co.

Preparation luminescent cadmium chlorophosphate containing manganese. No. 2,201,698. Alfred H. McKeag to General Electric Co.

Abrasive composition including abrasive particles and binder comprising reaction product of a magnesium oxychloride cement and zinc sulfide. No. 2,201,700. Henry P. Nelson.

Process for improving resistance of synthetic linear polyamides towards discoloration on exposure to light or heat. No. 2,201,741. John K. Owens and Arthur G. Scroggie to E. I. du Pont de Nemours & Co.

Preparation improved polymerization and condensation products of high molecular weight, soluble in lubricating oils and having characteristic of lowering pour point of waxy lubricating oils. No. 2,201,768. James A. Franceway, Jr., deceased, by James A. Franceway, Sr., and Garland H. B. Davis to Standard Oil Development Co.

Method converting chocolate liquor containing cocoa butter and fiber into altered physical form. No. 2,201,820. Paul T. Zizinia and Thomas L. McKenna.

Method treating asbestos to form a dense, impervious insulating material. No. 2,201,840. Emerson Venable to Westinghouse Electric & Mfg. Co.

Process forming urea-formaldehyde resinous solutions. No. 2,201,926. Ben E. Sorenson to E. I. du Pont de Nemours & Co.

Preparation of an anticryptogamic oxychloride of copper presenting colloid properties. No. 2,201,928. Pierre F. J. Souviron, Pierre E. Bigourdan and Paul Bebin.

Method giving permanent form to fibrous substances containing keratin. No. 2,201,929. John B. Speakman.

Artificial leather comprising a backing of fabric napped on one side and having secured to opposite side thereof a layer of vulcanized rubber cement and an indurated layer of vulcanized composition. No. 2,201,931. David J. Sullivan to E. I. du Pont de Nemours & Co.

Process for the production of capillary-active sulfonation products. No. 2,201,944. Martin Luther and Bruno V. Reibnitz to I. G. Farbenindustrie Aktiengesellschaft.

Photographic printing process and material. No. 2,202,026. Frank F. Renwick to Ilford, Ltd.

Method of separating hormones from biological materials. No. 2,202,209. Manasseh G. Sevag to Schering Corp.

Method treating organic X-ray or other fluorescent film having luminous material in said film. No. 2,202,048. Joseph Einig and Gerhard Stahlberg to Schering Corp.

Process of finishing leather. No. 2,202,092. Leon B. Conant.

Method and means for stabilizing soaps. No. 2,202,103. Lauren B. Hitchcock and Robert E. Devine to Hooker Electrochemical Company.

Lubricating oil with small amount of concentrated strong mineral acid to retard corrosion. No. 2,202,128. Charles C. Towne and Wilfred N. Meyer.

Improvement in sewage treatment comprising aerating sewage in presence of sodium nitrate. No. 2,202,135. John G. Bevan to Guggenheim Bros.

Insecticide containing as active ingredient material selected from group of plant extractives consisting of pyrethrins and rotenone, with sesame oil added. No. 2,202.145. Craig Eagleson to people of U. S.

Insecticide and mosquito larvicide. No. 2,202,148. Joseph M. Ginsburg to Endowment Foundation.

Vitaminizing product for supplying components of the vitamin B complex. No. 2,202,161. Carl S. Miner to Commercial Solvents Corp.

Method of protecting goods containing proteins against insects. No. 2,202,169. Paul Schlack to I. G. Farbenindustrie A. G.

Preparation of material for purification of gases, comprises mixing finely divided iron with paper pulp and water, agitating and aerating the admixture until desired oxidation of the iron is effected. No. 2,202,174. Frank A. Sullivan.

Adhesive comprising water, partially dextrinized starch, and a fluidifying agent which renders the reducing sugars in the starch inactive, said agent consisting of dioxan. No. 2,202,247. Paul B. Davidson and Julius R. Adams to Old Colony Envelope Company.

Process for concentration of vitamin compound. No. 2,202,307. Lela E. Booher.

Process for increasing fermentation rate of maltose. No. 2,202,356. Alfred S. Schultz and Lawrence Atkin to Standard Brands, Inc.

Lubricating oil comprising wax-free mineral oil and small percentage of soluble non-gelling aluminum soap of acids derived from product of mild oxidation of waxy hydrocarbons. No. 2,202,364. Peter J. Wiezevich by judicial change to Peter J. Gaylor to Standard Oil Development Co.

Method making translucent picture projection screen comprises spraying coats of cellulose ester onto a matrix to form a homogeneous transparent sheet, stripping sheet from said matrix and rendering one surface of said sheet translucent. No. 2,202,370. Bernard M. Bodde to Flat Light Screen Co., Inc.

Method determining character of coffee by determining oxidizability of roasted coffee. No. 2,202,385. William R. Johnston to Standard Brands, Inc.

Insecticidal composition containing mineral oil distillate, a poly-alkyl phenol and a third substance selected from group consisting of rotenone, oleoresins containing rotenone and the insecticidally active principles of derris, cube and timbo. No. 2,202,387. Eric C. Cunz and Alfonse T. Fiore to Givaudan-Delawanna, Inc.

Extreme pressure lubricants comprising heavy hydrocarbon base oil containing .2-1.5% corrosive sulfur and soluble lead compound. No. 2,202,394. Arnold J. Morway to Standard Oil Development Co.

Process for the production of virus vaccine for treatment of canine distemper. No. 2,202,435. Hideo M. Shoetensack.

Method of producing positive electrodes for lead-acid storage batteries. No. 2,202,489. Anna P. Hauel.

Apparatus for manufacturing starch paste. No. 2,202,573. Philip Dalton Coppock to The Distillers Company, Ltd.

Wood impregnating solution. No. 2,202,579. Bror Olof Hager to Bolidenss Gruvaktiebolag.

A froth flotation collecting reagent for oxide ore minerals. No. 2,202,601. Robert C. Ried to Separation Process Co.

Methods and apparatus for irradiating liquids. Nos. 2,202,610-611. George C. Supplee and Merrill J. Dorcas ½ to The Borden Company and ½ to National Carbon Co., Inc.

Extreme pressure lubricant comprising hydrocarbon lubricant oil and minor proportion of oil-miscible product obtained by reaction of halogenated aliphatic hydrocarbon and alkali thiocyanate. No. 2,202,641. Darwin E. Badertscher, Henry G. Berger and Francis M. Seger to Socony-Vacuum Oil Co., Inc.

Low viscosity starch adhesive and method of preparing the same. No. 2,202,678. Kyle Ward, Jr., to use of the people of U. S.

Method of producing a cellular glass product. No. 2,202,714. Arthur D. Nash to Pittsburgh Plate Glass Co.

Solid detergent in bar form consists of sodium dodecylsulfate, sodium sulfate, and as a binder, sodium starchglycolate. No. 2,202,741. Robert W. Maxwell to E. I. du Pont de Nemours & Co.

Process comprising reacting organic compound containing hydrocarbon radical of at least 8 C atoms with gaseous mixture of So_2 and Cl_2. No. 2,202,791. Arthur L. Fox, Clyde O. Henke, William H. Lockwood and John M. Tinker to E. I. du Pont de Nemours & Co.

High viscosity oil obtained by subjecting sperm oil to effect of silent electric glow discharge and non-polymerized sperm oil. No. 2,202,801. Charles N. Kimberlin to Standard Oil Development Company.

Sintered composition containing about 3-15% binder material including significant amounts of metal of the iron group, remainder consisting essen-

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tially of 10-79% tungsten carbide and 14-80% tantalum carbide. No. 2,202,821. Clarence W. Balke to Ramet Corp. of America.

Method inhibiting corrosion of alloy bearings comprises lubricating said bearings with oil containing at least .1% of 2.6-di-tertiary-butyl-4-methyl phenol. No. 2,202,825. Oliver L. Brandes to Gulf Research & Development Co.

Depilatory containing rosin and non-drying oil and small amount of wax. No. 2,202,829. Martha E. Buff.

Exothermic heat reaction product of true resinous character from a glyceride oil and an oxide. No. 2,202,849. Rudolph R. Grant ¼ to Max Isaacson and ¼ to Sol Shappirio.

A gelatine silver halide photographic emulsion containing as sensitizer a bisazole methine cyanine dye. No. 2,202,992. Edmund B. Middleton and George A. Dawson to Du Pont Film Mfg. Corp.

Lubricating oils containing 2.10% of para-cymene to lower pour point, No. 2,203,044. Thomas J. Brown.

Method producing blended asphaltic product possessing relatively high ductility and relatively low temperature susceptibility. No. 2,203,081. Earl C. Daigle to Socony-Vacuum Oil Co., Inc.

Lubricant comprising petroleum lubricating oil containing in admixture therewith .05-.1% stearic acid and .05-.5% of mild extreme pressure agent selected from class of esters and thioesters of phosphorous acids. No. 2,203,102. Kenneth P. Powers to Gulf Research & Development Corp.

Waterlaid web of felt composed of furnish stock comprising 75% newspaper, 10% flock derived from woolen fabrics, and 15% refined wood pulp having alpha-cellulose content in excess of 93%. No. 2,203,-173. William J. Moeller to The Philip Carey Mfg. Co.

Process for treatment of air by ozonizing so as to sterilize it and thereafter splitting up ozone to render sterilized air practically free from ozone. No. 2,203,188. Henri B Beer.

Method manufacturing antiseptic ice. No. 2,203,230. Paul Nitsche.

Method dressing cavities, wounds, etc., of trees and the like by use of latex. No. 2,203,274. William J. Anderson and Samuel S. Rosen to Protex Industries, Inc.

Lecithin product and method of making the same. No. 2,203,295. Richard Feiblemann to The Aktivin Corp.

Concrete hardening composition of metal salt type. No. 2,203,302. Leo Liberthson to L. Sonneborn Sons, Inc.

Treatment of starch converted dextrose solution containing non-crystallizable sugar with converting acid to change non-crystallizable sugar into crystallizable dextrose. No. 2,203,324. Charles J. Copeland to Corn Products Refining Company.

Method treating acid wood hydrolysate solutions to remove materials tending to inhibit normal fermentation thereof. No. 2,203,360. Alexander M. Partinsky to The Dow Chem. Co.

Evaporative odorizer for gas. No. 2,203,362. Joseph F. Putman to Standard Oil Co. of Calif.

Method deodorizing non-drying oils, fats and waxes comprises subjecting them to action of X-rays. No. 2,203,373. Henry J. Ullmann.

Production solid, stable vitamin E. concentrate and antioxidant from wheat germ oil. No. 2,203,400. John S. Andrews to General Mills, Inc.

Fungicide containing as essential ingredient 2-4 diamino-diphenylamine. No. 2,203,431. Marion C. Goldsworthy to the people of the U. S.

Masitcatory comprising one to three parts of glue hydrolized to such a degree that it does not swell with water and one part of glycerine. No. 2,203,436. Ferdinand A. Kertess.

Process of anhydrous sulfonation of liquid body of mineral oil. No. 2,203,440. Thomas C. Oliver to Charlotte Chemical Laboratories, Inc.

Adhesive comprising acid-reacting hardening agent and aqueous solution of bilateral formaldehyde-urea condensation product and up to approximately equal quantity blood albumen. No. 2,203,501. Adolf Menger to Plaskon Company, Inc.

Manufacture of new urea derivatives. No. 2,203,504. Henry Alfred Piggott and John D. Rose to Imperial Chemical Industries, Ltd.

Lubricant composition comprising >50% heavy mineral oil, <20% palm oil, >20% substantially "non-Corrosive" sulfur—containing extreme pressure lubricant bases. No. 2,203,507. Theodore G. Roehner and Emmett S. Carmichael to Socony-Vacuum Oil Co., Inc.

Process treating wood surfaces by bleaching with H_2O_2 before applying finish. No. 2,203,589. John W. Baymiller to A. G. Spalding & Bros., Inc.

Stable emulsion comprising polyvalent metal salt of naphthenic compound, water and sulfation product of ester of naphthenic acids with an unsaturated compound. No. 2,203,641. Roland Kapp to National Oil Products Co.

Emulsifying dispersing and wetting agent comprising water soluble salt of sulfation product of ester of naphthenic acids with unsaturated compound. No. 2,203,642. Roland Kapp to National Oil Products Co.

Process making thickened salad dressing emulsion. No. 2,203,643. Albert Musher to Musher Corp.

As pickling bath, aqueous solution of substance of group constituted by non-oxidizing acids and salts and substances of group constituted by alkylthiocyanates and aralkylthiocyanates. No. 2,203,649. Pieter Frederik Felkers to Stikstofbindingsingustrie "Nederland."

Photographic element comprising a support sensitive emulsion layer thereon, and layer of unsensitized gelatin thereon colored with a certain organic compound. No. 2,203,659. Samuel E. Sheppard and Robert C. Houck to Eastman Kodak Co.

Method mixing two liquid bodies. No. 2,203,673. Mead Cornell to The Cornell Machine Co.

Adhesive composition comprising one part raw rubber and .2-4 parts low acid type ester gum dispersed in volatile vehicle. No. 2,203,677. Richard G. Drew to Mninesota Mining and Mfg. Co.

Luminescent material and method of producing the same. No. 2,203,682. Ted. E. Foulke to General Electric Co.

Manufacture of detergents. No. 2,203,696. John F. Olin to The Sharples Solvents Corp.

Benzylether reaction product of dextran produced by action of bacteria on sucrose media, and benzyl chloride in alkaline solution. No. 2,203,703. Grant L. Stahly and Warner W. Carlson to Commonwealth Engineering Corp.

Insecticide. No. 2,203,744. Charles H. Peddrick, Jr., to Feldspathic Research Corp.

Antihalation photographic elements. Nos. 2,203,767-768. Walter D. Baldsiefen to Du Pont Film Mfg. Corp.

Warning agent for poisonous gases. No. 2,203,764. Roger Gordon Aitken and Charles J. S. Warrington, to Canadian Industries, Ltd.

Manufacture of Portland cement. No. 2,203,809. Ira C. Bechtold to California Portland Cement Co.

Luminescent material. No. 2,203,898. Reinier W. P. de Vries, to General Electric Company.

Stabilized photographic fixing powder. No. 2,203,903. Garnet Philip Ham to American Cyanamid Company.

Insecticidal composition comprising an organic thiocyano compound and derris root. No. 2,203,919. Donald F. Murphy, to Rohm & Haas Co.

Composition for sound recording disks. No. 2,203,983. Henry A. De Phillips.

Insecticidal agent. No. 2,204,009. Herman A. Bruson to Rohm & Haas Co.

Method of producing clean wet-ground mica. No. 2,204,063. Francis C. Atwood to Atlantic Research Associates, Inc.

Equine encephalomyelitis vaccine. No. 2,204,064. Joseph W. Beard.

Process separating minor constituents including phosphatidic material from vegetable oils without destruction of said phosphatidic material. No. 2,204,109. Benjamin H. Thurman to Refining, Inc.

Method of sterilizing liquids and filling containers. No. 2,204,131. Henry F. Glunz.

Insecticide. No. 2,204,197. Homer E. Whitmire to Shell Oil Company, Inc.

Method stimulating growth of seeds and plant cuttings comprises treatment with preparation containing hormone chemicals. Nos. 2,204,214-215. Nathaniel H. Grace to The Honorary Advisory Council for Scientific and Industrial Research.

Method producing colored suede finish on skins. No. 2,204,262. E. R. Stern to Sandoz Chemical Works, Inc.

Antigen for determination of tuberculosis and process for making same. No. 2,204,272. B. Gruskin to Lakeland Foundation.

Insulation material comprising 50% spun glass, 25% asbestos, 15% cotton, 10% silk. No. 2,204,288. H. M. Wilkoff to American Steel and Wire Co.

Adhesive composition and method of preparation. No. 2,204,384. Henry M. Salisbury.

Method treating livers to remove excess blood. No. 2,204,459. V. A. Wise, S. B. Duffies, G. R. Henney, and C. L. Lohner to Industrial Patents Corp.

Insecticide containing as active ingredient compound chosen from group consisting of dioctylamine and its salts. No. 2,204,511. A. W. Ralston, J. Harwood and E. W. Hopkins to Armour & Co.

Improvement in tanning leather with naphthalene sulfonic acid—formaldehyde condensation product. No. 2,204,512. A. Russell and J. W. Copenhaver to Rohm & Haas Co.

Preformed construction block-like strip containing plastic water-proof binder, shredded fibrous waste materials and mineral particles. No. 2,204,533. A. C. Fischer to Philip Carey Mfg. Co.

Process of effecting cation exchange. No. 2,204,539. H. Wassenegger and K. Jaeger to I. G. Farbenindustrie A. G.

Coal Tar Chemicals

Process obtaining valuable organic compounds from coal extracts. No. 2,202,901. Henry Dreyfus.

Vertical retort setting for carbonization of coal and like materials. No. 2,203,586. Frederick J. West and Ernest West to West's Gas Improvement Co., Ltd.

Production of butane-polycarboxylic acids. No. 2,203,628. Heinrich Hopff and Wilhelm Rapp to I. G. Farbenindustrie Aktiengesellschaft.

Process for the distillation of tar or pitch. No. 2,203,645. Otto Reynard.

Coatings

Method producing non-tacky resinous coatings upon the individual grains of a mass composed of a plurality of abrasive grains. No. 2,201,-321. Norman P. Robie to The Carborundum Co.

Roofing coating. No. 2,202,002. Norman P. Harshberger to Bakelite Building Products Co., Inc.

Process producing transparently colored lacquers which contain as film-forming material a chemically drying binding agent selected from class consisting of drying oils and condensation products of polyhydric alcohols, polybasic carboxylic acids and drying oils. No. 2,202,057. Heinrich Kobbe to General Aniline & Film Corp.

A flexible waterproofing lacquer. No. 2,202,254. Charles S. Hyatt and William D. Hedges to Columbus Coated Fabrics Corp.

Bath consisting of sodium hydroxide, water, phosphoric acid and sulfur for treating steel to provide substantially black colored protective coating thereon. No. 2,203,531. Vincent T. Malcolm to The Chapman Valve Mfg. Co.

Flexible adhesive coating material for articles such as sandpaper. No. 2,202,765. Durward O. Guth to Minnesota Mining & Mfg. Co.

Method producing corrosion resistant coatings on magnesium or magnesium alloys. No. 2,203,670. Robert W. Buzzard.

Leather coating finish comprising pigment and polymer of at least one ester of group consisting of acrylic and α methacrylic esters. No. 2,204,-520. H. B. Walker and P. W. McWherter to Rohm & Haas Co.

Dyes, Stains, Etc.

Process for dyeing acetate artificial silk. No. 2,201,367. William J. Grubb, Cecil Shaw and Reginald H. Sennett to Imperial Chemical Industries, Ltd.

Monoazo dyestuffs insoluble in water. No. 2,201,648. Ernst Fischer to General Aniline & Film Corp.

Process for increasing fastness of dyeings upon textile fiber with azo dyes. No. 2,201,814. John G. Evans, Henry A. Piggott and Clarence S. Woolvin to Imperial Chemical Industries, Ltd.

Acid indolylidiphenylmethane dyestuff. No. 2,202,037. Paul Wolff and Emil Beniers to General Aniline and Film Corp.

Acid green indolylidiphenylmethane dyestuff. No. 2,202,038. Paul Wolff and Emil Beniers to General Aniline & Film Corp.

Sulfur dyestuff derived from indophenols. No. 2,202,040. Werner Zerweck and Wilhelm Hechtenberg to General Aniline & Film Corp.

Step of incorporating diglycol laurate with dyestuff in process of locally coloring materials. No. 2,202,066. Herbert Platt to Celanese Corp. of America.

Green trisazo dyestuffs and a process for their manufacture. No. 2,202,350. Heinrich Lier, to Chemical Works, formerly Sandoz.

Coloring matters of the phthalocyanine type. No. 2,202,632. Isidor M. Heilbron, Francis Irving and Reginald Patrick to Imperial Chemical Industries, Ltd.

Reissue, azo dyes. No. 21,476. Swanie S. Rossander to E. I. du Pont de Nemours & Co.

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Preparation cyanine dye comprising condensing, in presence of basic condensing agent, a cyclammonium alkyl quaternary salt containing reactive methyl group with another cyclammonium alkyl quaternary salt. No. 2,202,827. Leslie G. S. Brooker to Eastman Kodak Co.

Methine dyestuffs. No. 2,202,990. Edmund B. Middleton and George A. Dawson to Du Pont Film Mfg. Corp.

Polymethine dyes and method for preparation thereof. No. 2,202,991. Edmund B. Middleton to Du Pont Film Mfg. Corp.

Water-insoluble azo dyestuffs and fiber dyed therewith. No. 2,203,038. Arthur Zitscher, Robert Schmitt and Herbert Kracker to General Aniline & Film Corp.

Polyazo dyestuffs and process of making same. No. 2,203,196. Walter Hanhart to Society of Chemical Industry in Basle.

Anthraquinone vat dyestuffs. No. 2,203,217. Ralph N. Luick and William Dettwyler to E. I. du Pont de Nemours & Co.

Preparation dry dye preparations of soluble salts of sulfuric esters of leuco anthraquinone vat dyestuffs. No. 2,203,257. David Fairweather to Imperial Chemical Industries, Ltd.

As new dyestuffs, alkaline condensation product of Bz-l- benzanthronyl-aminoanthrones. No. 2,203,416. William H. Lycan to E. I. du Pont de Nemours & Co.

Process improving fastness to water and aqueous treatment of dyeings made on cellulosic material. No. 2,203,492. John Gwynant Evans, Henry A. Piggott, Reginald J. Williams Reynolds, John D. Rose and Eric E. Walker to Imperial Chemical Industries, Ltd.

Process enhancing affinity of cellulosic material for acid wool dyestuffs and acid chrome dyestuffs. No. 2,203,493. John G. Evans, Henry A. Piggott, Reginald J. W. Reynolds, John D. Rose and Eric E. Walker to Imperial Chemical Industries, Ltd.

Azo dyestuffs. No. 2,203,818. Richard Fleischhauer and Heinrich Ritter to General Aniline & Film Corp.

Polymethine dyes. No. 2,204,188. Oskar Riester to General Aniline & Film Corp.

Acid dyestuffs of the indolyldiphenyl-methane series. No. 2,204,201. Paul Wolff and Emil Beriers to General Aniline and Film Corp.

Azo dyes. Nos. 2,204,229-230. S. S. Rossander and C. E. Sparks to E. I. du Pont de Nemours & Co.

Vat dyestuffs of the anthraquinone-acridone series. No. 2,204,232. Hans Schlichenmaier and Ludwig Berlin to General Aniline and Film Corp.

Equipment and Apparatus

Fractionating column. No. 2,201,502. Cyrus Pyle, III, to E. I. du Pont de Nemours & Co., Inc.

Still for refining used crankcase oils. No. 2,201,558. William D. Harris to Refinoil Mfg. Corp.

Ceramic vessel having silicon carbide body portion, annular ring of stoneware bonded thereto and lid of ceramic material for tightly closing said vessel. No. 2,201,684. Percy C. Kingsbury to General Ceramics Co.

Cast refractory block and method of producing the same. No. 2,201,723. Gordon S. Fulcher to Corhart Refractories Co.

Cooling tower condenser. No. 2,201,834. Leon T. Mart to The Marley Co.

A colloidal mill. No. 2,201,889. Lewis M. Dixon to Columbia Ribbon & Carbon Mfg. Co., Inc.

Weir ring and downcomer assembly for distilling columns. No. 2,201,949. Theodore O. Wentworth to The Vulcan Copper and Supply Co.

An ammonia oxidation system including means for preheating. No. 2,201,958. Ralph S. Richardson to Chemical Construction Corp.

Apparatus for recovering oil from exhaust mixtures. No. 2,201,961. Harold I. Stoltz to Kinney Mfg. Co.

Substantially nonfiltering water softening device. No. 2,202,001. Austin Gudmundsen to Gudmundsen-Stratton Labs., Inc.

Apparatus to remove non-condensible gas from refrigerating medium. No. 2,202,010. Mathias R. Kondolf.

Reducing piece for glass instruments for laboratory technics. No. 2,202,055. Wilhelm Juffa.

Chemical heating pad and method of manufacture. No. 2,202,067. Frederick L. Reynolds and Leon Markel and Jack A. Siebert to United States Appliance Corp.

Apparatus for contacting vapors and liquids. No. 2,202,071. Jan Roelof Johan van Dongen and Willem Johannes Dominicus van Dijck to Shell Development Co.

Filtering apparatus. No. 2,202,191. Charles H. Cuno to The Cuno Engineering Corp.

Fluid seal. No. 2,202,206. Lloyd A. Johnson to National Oil Seal Co.

Device for intermittently controlling flow of fluids. No. 2,202,462. Jeddy D. Nixon, ½ to Wilson Supply Co.

Apparatus for concentrating ores by flotation. No. 2,202,484. Augustus B. Emery to Messina Development Co., Ltd.

Apparatus for refining used lubricating oil. No. 2,202,657. Carl E. Holt.

Acid proof container for liquids. No. 2,202,675. James Hervey Sherts, to Pittsburgh Plate Glass Co.

A digester. No. 2,202,772. Augustus C. Durdin, Jr., to Chicago Pump Co.

Process and apparatus for vaporizing corrosive liquid by contact with hot gas. No. 2,202,800. Homer Kieweg to Commercial Solvents Corp.

Filtering medium adopted to purify and decolorize liquids by contact filtration, comprising mixture containing bleaching agent from class consisting of activated clay, bone black and charcoal mixed with finely divided contact material from class consisting of pyrophyllite, talc, amorphous silica, fired clay, acid-treated clay and fuller's earth. No. 2,202,806. William H. Alton to R. T. Vanderbilt Co., Inc.

Acetylene generator. Nos. 2,202,847-848. David F. Geiger, ½ to Carl J. Nyquist and ½ to Rudolph Shuhart.

Filtering apparatus. No. 2,202,932. Harold C. Tingey to United States Rubber Co.

Means for purifying water. No. 2,203,040. Rex E. Bassett, Jr.

Heat detector. No. 2,203,051. Roscoe Bartlett Green and Alfred V. Pennington.

Apparatus for electroplating wire or the like. No. 2,203,062. Julian L. Schueler to Continental Steel Corp.

Method fastening flexible sheet metal piece to ceramic carrier. Nos. 2,203,099-100. Werner Osenbert.

Viscosimeter. No. 2,203,132. Rudolf D. Delamere and William M. Hutcheon to A. R. Clark & Co., Ltd.

Paint mixing apparatus. No. 2,203,135. Charles E. Farrington.

Pasteurizing apparatus. No. 2,203,141. John R. Gruetter, to The Liquid Carbonic Corp.

Annealing lehr and method of annealing glassware. No. 2,203,182. William S. Rendall to Crown Cork & Seal Co., Inc.

Device for applying treating material to leather. No. 2,203,250. Peter Bolhofner and Theodore Koch of ¼ to Emil F. Pelikan and ¼ to Edward Bolhofner.

Method of and apparatus for making glass. No. 2,203,269. Vergil Mulholland to Hartford-Empire Co.

Apparatus for determining seismic wave velocities. No. 2,203,272. Neil R. Sparks to Stanolind Oil and Gas Co.

Apparatus for depositing foam on liquid surfaces. No. 2,203,301. Harold M. Hoe to Gulf Oil Corp.

Steam and sediment trap for a pressure responsive instrument. No. 2,203,434. Howard J. Hartley to United States Gauge Co.

Apparatus for measuring fluid pressure. No. 2,203,460. Karl W. Fieber to Siemens Apparate und Maschinen Gesellschaft mit beschrankter Haftung.

Liquid level controlling system. No. 2,203,472. Edwin X. Schmidt to Cutler-Hammer, Inc.

Manometer for use with vacuum apparatus. No. 2,203,574. Andrej Malicov.

Means for measuring and controlling fluid pressures. No. 2,203,577. Frank E. O'Neill and Rowland G. Whealton to Mordica O. Johnston.

Gas scrubber for removing suspended particles from stream of gas. No. 2,203,592. Norman C. Brundage to Western Precipitation Corp.

Process and apparatus for separating immiscible liquids of different densities. No. 2,203,718. Donald D. Burch.

Glass tank comprising cast refractory block consisting principally of alumina and containing over 5% iron oxide. Nos. 2,203,767-68. Walter D. Baldsiefen to Du Pont Film Mfg. Corp.

Apparatus for injecting molten sulfur underground. No. 2,203,881. James W. Schwab, Samuel Forde Powell, and Guy Smith to Texas Gulf Sulphur Company.

Coal charging hopper for coke ovens. No. 2,204,019. Heinrich Koppers to Koppers Company.

Water deaerator and purifier. No. 2,204,062. Samuel B. Applebaum to The Permutit Co.

Apparatus for measuring and dispensing fluent materials volumetrically. No. 2,204,097. James M. Montgomery to The Permutit Company.

Fluid heat exchange apparatus. No. 2,204,144. William T. Moore, Perry R. Cassidy, Ralph M. Hardgrove and Howard J. Kerr to The Babcock & Wilcox Company.

Reactor for continuous reaction of reagents one of which is corrosive. No. 2,204,156. Waldo L. Semon to The B. F. Goodrich Co.

Melting furnace for light metals such as aluminum. No. 2,204,173. Percy L. Bowser, Jr., to The Sterling Corp.

Apparatus for cultivating crystals. No. 2,204,180. Erwin Gerlach to Telefunken Gesellschaft fur Drahtlose Telepraphie m. b. H.

Method of and means for purifying water. No. 2,204,225. F. G. Merckel to Wallace & Tiernan Products, Inc.

Apparatus for producing dry fixed gas from liquid hydrocarbons. No. 2,204,318. F. J. Nolan to Electro-Gas Corp.

Adsorption apparatus and method. No. 2,204,431. W. E. Moore and George L. Simpson to Pittsburgh Research Corp.

Electrolytic cell. No. 2,204,506. A. J. MacDougall to MacDougall Chemical Co.

Oil and gas separator. No. 2,204,509. R. S. McKeever to Parkersburg Rig & Reel Co.

Timer for governing steps in a process. No. 2,204,532. P. Erbguth and R. Sandberg to Charles J. Tagliabue Mfg. Co.

Explosives

Progressive-burning propellent. No. 2,201,640. Lewis C. Weldin to Hercules Powder Co.

Explosive comprising picric acid 85-90% and mononitronaphthalene 10-15%. No. 2,202,851. George C. Hale.

Process for crystallizing organic explosive compounds. No. 2,204,059. Marshall F. Acken to E. I. du Pont de Nemours & Co.

Fine Chemicals

A (Polyhalophenoxy-alkyl) (Thiocyano-Alkyl) ether. No. 2,201,156. Gerald H. Coleman and Clarence L. Moyle to The Dow Chemical Co.

Organic thiocyanates. No. 2,201,157. Gerald H. Coleman and Robert W. Sapp to The Dow Chemical Co.

A (alkyl-Halo-Phenoxy-alkyl) (thiocyano-Alkyl) ether. No. 2,201,158. Gerald H. Coleman and Robert W. Sapp to The Dow Chemical Co.

Secondary thioamides and process of preparing them. No. 2,201,170. William E. Hanford to E. I. du Pont de Nemours & Co., Inc.

Monomeric polar-substituted thioamides and their preparation. No. 2,201,171. William E. Hanford to E. I. Du Pont de Nemours & Co., Inc.

Polymeric carbothioamides and process for preparing the same. No. 2,201,172. William E. Hanford to E. I. du Pont de Nemours & Co., Inc.

Preparation thiolactoms comprises reacting hydrogen sulfide with a primary monoamino-mononitrile. No. 2,201,200. Paul S. Pinkney to E. I. du Pont de Nemours & Co., Inc.

Manufacture of aliphatic acid by subjecting carbon monoxide to reaction with vapor of an aliphatic alcohol. No. 2,201,228. Henry Dreyfus.

Compounds derived from dehydroabietic acid. No. 2,201,237. Edwin R. Littmann to Hercules Powder Co.

Method of recovering sucrose from impure solutions. No. 2,201,419. William H. Young.

Manufacture of zirconium compounds. No. 2,201,508. Daniel Tyrer.

Lipophilic-hydrophilic derivatives of thio compounds. No. 2,201,535. Benjamin R. Harris.

Manufacture of alkali metal cyanide. No. 2,201,760. Leslie J. Burrage to Imperial Chemical Industries, Ltd.

A sulfamic acid salt of polymeric amino nitrogen. No. 2,201,762. Martin Eli Cupery to E. I. du Pont de Nemours & Co.

A 1,1′-dialkyl-7,8,7′,8′-di-Bz4,4′-carbocyanine salt. No. 2,201,816. Edmund B. Middleton and George A. Dawson.

A polymeric saturated sulfone. No. 2,201,884. Wallace Hume Carothers deceased, by Wilmington Trust Co. to E. I. du Pont de Nemours & Co.

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Preparation of an ether of a methylol urea. No. 2,201,927. Ben E. Sorenson to E. I. du Pont de Nemours & Co.

Manufacture of benzophenone polycarboxylic acids. No. 2,202,063. James Ogilvie to National Aniline & Chem. Co.

Production di-isobutane from normally gaseous mixture consisting of 4 C atom hydrocarbons and containing isobutene and normal butenes. No. 2,202,104. Vladimir Ipatieff and Raymond E. Schaad to Universal Oil Products Company.

Preparation of guanyl-urea-N-sulfonic acid. No. 2,202,212. Hans Z. Lecher and Alan E. Pierce to American Cyanamid Co.

Substituted sulfanilamides and process for making them. No. 2,202,219. Fritz Mietzsch and Josef Klarer to Winthrop Chemical Company, Inc.

Preparation sodium monoxide in substantially dust-free form. No. 2,202,252. Ewald Herzog to Deutsche Gold und Silber Scheideanstalt.

Production sodium monoxide comprises reacting mixture of sodium, sodium hydride and sodium hydroxide at temperature below B. P. of sodium but not lower than melting point of sodium hydroxide. No. 2,202,270. Norman D. Scott to E. I. du Pont de Nemours & Co.

Hexamine-insulin. No. 2,202,325. Ernest Butterworth and Joseph A. Musgrave Woodcock to Imperial Chemical Industries, Ltd.

A quaternary ammonium salt, a water soluble powder capable of rendering dyeings of direct dyeing dye stuffs fast to water by after treatment. No. 2,202,328. Carlo Corizzo.

Process making higher aliphatic lactones from hydrocarboxylic acids. No. 2,202,437. Max Stoll to Firmenich & Cie.

Process of preparing higher lactones containing at least 11 carbon atoms and at least 2 heterocyclically bound oxygen atoms in the lactone ring. No. 2,202,448. Roger Firmenich to Firmenich and Cie.

Sulfurized dihydro polycyclic aromatic hydrocarbons and process for making same. No. 2,202,501. Paul La Frone Magill to E. I. du Pont de Nemours & Co.

Sulfurized dihydronaphthalene dimer and process for making same. No. 2,202,502. Paul La Frone Magill to E. I. du Pont de Nemours & Co.

Compounds of the cyclopentanopolyhydrophenanthrene series and a process of preparing them. No. 2,202,619. Max Bockmuhl, Gustav Ehrhart, Heinrich Ruschig and Walter Aumuller to Winthrop Chemical Co., Inc.

Process manufacturing highly reactive thorium oxide from thorium oxalate. No. 2,202,637. Richard Muller and Harry Lee to Chemische Fabrik von Heyden, A. G.

Method of making lead nitratohypophosphite. No. 2,202,646. Willi Brun to Remington Arms Co., Inc.

Manufacture of lead styphnate. No. 2,202,647. Willi Brun to Remington Arms Co., Inc.

In process for preparation of estrogenic compound steps of reducing dehydroneoergosterol to tetrahydro-dehydroneoergosterol. No. 2,202,704. Russell E. Marker and Thomas S. Oakwood to Parke, Davis & Company.

Organic arsenic compounds and method of obtaining same. No. 2,202,733. Cliff S. Hamilton to Parke, Davis & Co.

Preparation of polyalkylene ether thioammeline ethers. No. 2,202,228. Herman A. Bruson to The Resinous Prods. Co.

Process polymerizing mixture including polyallyl ester of saturated polybasic acid, and a compound containing the polymerizable group $=C=CH_2$. No. 2,202,846. Benjamin S. Garvey and Claude H. Alexander to The B. F. Goodrich Company.

Quaternary ammonium salts. No. 2,202,864. Henry Alfred Piggott and Clarence Sydney Woolvin to Imperial Chemical Industries, Ltd.

Dialkylaminobenzoates and process of making them. No. 2,202,865. Henry Alfred Piggott and Clarence S. Woolvin to Imperial Chemical Industries, Ltd.

Sulfanilamido-aminopyridines and process for producing the same. No. 2,202,933. Edmond T. Tisza, Bernard F. Duesel and Harris L. Friedman to Nepera Chemical Co., Inc.

Process for making alkali metal amides. No. 2,202,994. Julius A. Nieuwland to E. I. du Pont de Nemours & Co.

Preparation sodium salt of N-dimethyl glycine. No. 2,203,009. William S. Calcott, Louis Spiegler and John M. Tinker to E. I. du Pont de Nemours & Co., Inc.

Chemical compound selected from group consisting of diacetyldihydromorphinone and acid salts thereof. No. 2,203,121. Philipp Zutavern and Heinrich Metzger to E. Bilhuber, Inc.

Production of dextrose from starch. No. 2,203,325. Sidney M. Cantor to Corn Products Refining Co.

Sodium abietyl sulfate and process of making abietyl sulfate by sulfating abietyl alcohol. No. 2,203,339. Howard M. Parmelee to E. I. du Pont de Nemours & Co.

High molecular weight substituted ethinyl carbinols. No. 2,203,363. Anderson W. Ralston to Armour & Co.

Process for the stabilization of metal organic compounds. No. 2,203,374. Johannes Andreas van Melsen to Shell Development Co.

Water-soluble and oil-soluble sulfonic or sulfate derivatives of hydrocarbons. No. 2,203,441. Thomas C. Oliver to Charlotte Chemical Laboratories, Inc.

Quaternary ammonium compound. No. 2,203,505. Henry Alfred Piggott and John D. Rose to Imperial Chemical Industries, Ltd.

Quaternary ammonium urea derivatives. No. 2,203,506. Henry A. Piggott and John D. Rose to Imperial Chemical Industries, Ltd.

Process reacting sodium iodide in presence of organic solvent with acyl ester of 5,6,22,23-tetrabromostigmasterol. No. 2,203,611. Max Bockmuhl, Gustav Ehrhart, Heinrich Ruschig, and Walter Aumuller to Winthrop Chemical Company, Inc.

Process for the separation of chlorinated compounds from liquids. No. 2,203,690. Carl J. Malm and Gale F. Nadeau to Eastman Kodak Co.

Chemical method of etherifying dextran. No. 2,203,704. Grant L. Stahly and Warner W. Carlson to Commonwealth Engineering Corp.

Soluble benzyl ether of dextran. No. 2,203,705. Grant L. Stahly and Warner W. Carlson to Commonwealth Engineering Corp.

Manufacture of melamine and its deamination products. No. 2,203,860. Ludwig J. Christmann and George H. Foster to American Cyanamid Company.

Preparation of aromatic nitriles. No. 2,203,861. Arden G. Deem, and Wilbur A. Lazier to E. I. du Pont de Nemours & Co.

Polymers of high molecular weight and process of producing same. No. 2,203,873. Martin Mueller-Cunradi and Michael Otto to I. G. Farbenindustrie Aktiengesellschaft.

Sulfuric acid esters of alcohol ethers containing a carbocyclic group. No. 2,203,883. Adolf Steindorff, Gerhard Balle and Paul Heimke and Karl Horst to I. G. Farbenindustrie Aktiengesellschaft.

Preparation of salts of 2-ketoaldonic acids. No. 2,203,923. Richard Pasternack and Peter P. Regna to Charles Pfizer & Company.

Manufacture of coumarin. No. 2,204,008. Edgar C. Britton and John E. Livak to The Dow Chemical Co.

Process for separation of isotopes. No. 2,204,072. John G. Dean to The Permutit Company.

Process preparing monoalkyl esters of sulfuric acid. No. 2,204,323. E. W. Smith to Rohm & Haas Co.

Process for the production of N-substituted formamides. No. 2,204,371. D. J. Loder to E. I. du Pont de Nemours & Co.

Chemical compound consisting of beta methyl glycerine, one hydroxy group of which has been esterified by a long chain fatty acid and another of which has been replaced by a sulfonate radical. No. 2,204,433. F. W. Muncie and K. L. Russell to Colgate-Palmolive-Peet Co.

Manufacture alkali metal hyposulfites. No. 2,204,476. K. Dorph to The Mathieson Alkali Works, Inc.

Preparation of derivatives of beta—(P-Hydroxyphenyl)—isopropylamine. No. 2,204,494. G. Hildebrandt to E. Bilhuber, Inc.

Method obtaining pure noble gases. No. 2,204,501. A. Krauss to I. G. Farbenindustrie A. G.

Low molecular weight methacrylic acid ester polymers. No. 2,204,517. D. E. Strain to E. I. du Pont de Nemours & Co.

Industrial Chemicals

Production of anhydrous magnesium chloride. No. 2,201,206. Walther Schmid, Fritz Wienert, and Hans George, to Magnesium Development Corp.

Fractionation of chlorinated ketones by steam distillation. No. 2,201,259. Albert E. Calkins to The B. F. Goodrich Co.

Method for the manufacture of hydrogenation products of furfural. No. 2,201,347. Wilhelm Rittmeister to Patchem A.-G. Zur Beteiligung An Patenten Und Sonstigen Erfindungsrechten Auf Chemische Verfahren.

Modified polymers of methacrylic acid esters and preparation of the same. No. 2,201,395. David A. Fletcher to E. I. du Pont de Nemours & Co., Inc.

Process for recovery alkali metal nitrate by evaporation of aqueous solutions of same containing HNO_3 and Hcl. No. 2,201,423. Herman A. Beekhuis, Jr., to The Solvay Process Co.

Cyclic process of making zinc sulfide. No. 2,201,522. Harlan A. Depew to American Zinc, Lead and Smelting Co.

Preparation olefin-sulfur dioxide polysulfones comprising reacting SO_2 with a mono-olefin. No. 2,201,544. Carl S. Marvel, and Donald S. Frederick, Frederick to Marvel.

Process for the solvent extraction of liquid mixtures. Nos. 2,201,449-50. Willem J. D. van Dijck and Albert Schaafsma to Shell Development Co.

Process of concentrating nitric acid. No. 2,201,631. Ralph F. Peterson and Philip G. Wrightsman to E. I. du Pont de Nemours & Co., Inc.

Production substantially dry hydrated lime. No. 2,201,667. Harry N. Huntsicker to United States Gypsum Co.

Production polymers of high molecular weight and soluble in lubricating oils. No. 2,201,767. James A. Franceway, Jr., deceased, by James A. Franceway, Sr., and Garland H. B. Davis to Standard Oil Development Co.

Process reacting iso-paraffinic hydrocarbons with olefinic hydrocarbons to produce alkylated iso-paraffinic hydrocarbons. No. 2,201,823. William E. Bradley to Union Oil Co. of Calif.

Distillation of fatty acids. No. 2,202,007. Martin H. Ittner to Colgate-Palmolive-Peet Co.

Process for producing high-grade rosin and turpentine. No. 2,202,028. Joseph A. Scruggs.

Process for catalytic thermal dehydration of lower fatty acids. No. 2,202,046. Henry Dreyfus and Leonard Fellows to Celanese Corp. of America.

Process for the carbonization of wood and similar materials. No. 2,202,231. Theophil Reichert to Chemical Marketing Co., Inc.

Process of producing hydrogen. No. 2,202,374. Mathias Mrankl, to American Oxythermic Corp.

Production of sulfur dioxide from metal sulfates. No. 2,202,414. Blakeslee Barnes and Harold E. Broughton to Chemical Construction Corp.

Process of purifying dilute aqueous phosphoric acid solutions. No. 2,202,526. Arthur W. Hixson and Ralph Miller to The Chemical Foundation, Inc.

Preparation sulfonic acids of high wetting, cleansing, and emulsifying properties. No. 2,202,686. Joseph N. Borglin to Hercules Powder Co.

Process for concurrent fermentations by means of yeast and cutyl alcohol-producing bacteria. No. 2,202,785. Hugh R. Stiles and Louis M. Pruess to Commercial Solvents Corp.

Industrial ethyl alcohol denatured with .5-5 parts aldol. No. 2,202,845. Louis J. Figg, Jr., to Eastman Kodak Co.

Process for preparation of non-benzenoid polymers of acetylene. No. 2,202,919. Albert Perlick and Alfons Steinmetz to I. G. Farbenindustrie Aktiengesellschaft.

Method of the recovery of values from lignite liquor. No. 2,202,959. Raymond Nauth.

Soap product consisting of individual tubular sections approximately .07-.09 inch in diameter, having soap walls approximately .0035-.0055 inch in thickness. No. 2,202,973. Charles T. Walter to Industrial Patents Corp.

Apparatus for producing gas from carbon containing materials. No. 2,203,137. Nat Harris Freeman.

Drying agent consisting essentially of anhydrous calcium sulfate and anhydrous calcium chloride and method of drying gas therewith. No. 2,203,144. William A. Hammond.

Process removing unsulfonated material from reaction product of a sulfonating agent and organic material soluble in liquid consisting of liquid sulfur dioxide and water immiscible mixtures containing liquid sulfur dioxide. No. 2,203,443. John Ross and Joseph E. Mitchell to Colgate-Palmolive-Peet Co.

Process increasing SO_3 content of sulfonated fatty acids. No. 2,203,524. Bernard A. Dombrow and Ralph M. Beach to National Oil Products Co.

Process for making magnesium silicate products. No. 2,203,614. Norris Goodwin to Hewlings Mumper and Lewis Cruickshank.

Nitric acid oxidation of oleic and other fatty acids. No. 2,203,680. Ellsworth K. Ellingboe to E. I. du Pont de Nemours & Co.

Method of making ether and ester derivatives of polysaccharides synthesized through bacterial action. No. 2,203,702. Grant L. Stahly and Warner W. Carlson to Commonwealth Engineering Corp.

Flotation reagent consisting of reaction product of alkali metal hydroxide, carbon disulfide and crude mixture of organic sulfur compounds. No. 2,203,739. Emil Otto, Elsmere to Hercules Powder Co.

Method for flotation of ores. No. 2,203,740. Emil Ott, to Hercules Powder Co.

Continuous mixing of viscous materials. No. 2,203,980. Robert V. Burt to The Procter & Gamble Company.

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Production of water gas. No. 2,204,001. Max Radtke to Koppers Company.

Production of water gas No. 2,204,003. Roman Rummel to Koppers Company.

Calcium silicate and method of preparing the same. No. 2,204,113. Raymond P. Allen to The B. F. Goodrich Co.

Preparation monochlorinated ketone. No. 2,204,135. Paul C. Jones to The B. F. Goodrich Co.

Method producing catalyst for use in dehydrating alcohols. No. 2,204,-157. Waldo L. Semon to The B. F. Goodrich Co.

Solvent for high molecular weight polymers of iso-olefins. No. 2,204,-167. Peter J. Wiezevich by judicial change, Peter J. Gaylor to Standard Oil Development Co.

Method producing chlorine by oxidation of HCl. No. 2,204,172. Frederick R. Balcar to Air Reduction Co., Inc.

Process for producing acetylene and lime hydrate. No. 2,204,184. Hugo V. Kojola and Maurice O'Brian to The Prest-O-Lite Company, Inc.

Method of making barium chloride. No. 2,204,192. Randolph C. Specht to Barium Reduction Corp.

Method recovering molybdenum compound from spent catalyst containing molybdenum oxide, zinc oxide and magnesium oxide. No. 2,209,193. William E. Spicer and Rhea N. Watts to Standard-I. G. Company.

Process alkylating acyclic isoparaffins with mono-olefins in presence of a catalyst. No. 2,204,194. Eldon E. Stahly and Erwin M. Hattox to Standard Oil Development Company.

Preparation of secondary alkyl sulfonic acids. No. 2,204,210. Mark Wendell Farlow to E. I. du Pont de Nemours & Co.

Alkylated phenols and process of producing same. No. 2,204,339. A. F. Bowles to Reilly-Whiteman-Walton Co.

Lamellar trisodium phosphate hydrate. No. 2,204,357. W. W. Heckert to E. I. du Pont de Nemours & Co.

Lamellar trisodium phosphate hydrate. No. 2,204,358. W. W. Heckert and J. E. Kirby to E. I. du Pont de Nemours & Co.

Lamellar trisodium phosphate hydrate. No. 2,204,364. R. J. Kepfer to E. I. du Pont de Nemours & Co.

Method making carbon black. No. 2,204,366. W. A. Knapp to Imperial Oil & Gas Products Co.

Manufacture zinc hyposulfite. No. 2,204,504. R. Luehdemann to I. G. Farbenindustrie A. G.

Metals, Alloys

Method of decarbonizing carbon-holding iron without melting. No. 2,201,181. Bo Michael Sture Kalling.

Alloy steel of martensitic type. No. 2,201,425. Karl Torkel Berglund to Sandviken Jernverks Aktiebolag.

Method reducing iron ore. No. 2,201,460. Russell H. Varian.

Process of pickling metals. No. 2,201,488. Marion W. Harman to Monsanto Chem. Co.

Method of preserving fine grained structure and inhibiting grain growth in manufacture of wrought articles of copper base alloys. No. 2,201,555. Michael G. Corson to Union Carbide and Carbon Research Labs.

Copper oxidizing furnace. No. 2,201,580. Floyd T. Hague, to Westinghouse Electric & Mfg. Co.

Method treating commercial manganese to render it more suitable for preparation of alloys. No. 2,201,677. Reginald S. Dean to Chicago Development Co.

Process degreasing metal articles by use of three stage solvent system. No. 2,201,729. Norman R. Hood to Imperial Chemical Industries, Ltd.

Process for carrying out reducing metallurgical reactions by combustion of carbon in a shaft furnace. No. 2,201,738. Pierre Neve.

Method for decarbonizing a carbon holding metal such as pig iron. No. 2,201,900. Bo Mikael Sture Kalling and Ivar Rennerfelt.

Alloy of nickel, manganese and copper. No. 2,202,012. James R. Long to Chicago Development Co.

Incandescent metallic filament composed of alloy of predominantly tungsten and a small percentage of rhenium and vanadium. No. 2,202,108. Clemens A. Laise, Fidelity Union Trust Co., and Rudolf Sievert, executors of Clemens A. Laise, deceased.

Method recovering molybdenum from acid solutions. No. 2,201,525. Arthur W. Hixson and Ralph Miller to The Chemical Foundations, Inc.

Selenium plating of steel. No. 2,202,532. Vincent T. Malcolm to The Chapman Valve Mfg. Co.

A non-oxidizing, heat erosion and corrosion resistant alloy. No. 2,202,-648. George Charlton, Eaton Mfg. Co.

Process treating slimes comprising removing copper therefrom, fusing decopperized slimes with slag comprising caustic soda in presence of reducing agent and over bath comprising lead to form two-layer charge consisting of liquid slag layer and a liquid metal layer, and separately treating said layers for recovery of respective values. No. 2,202,893. Jesse O. Betterton and Yurii E. Lebedeff to American Smelting and Refining Co.

Alloy containing 20-50% chromium and 50-20% columbium. the total % of columbium and chromium being between 50-90%; 3-8% and incidental impurities. No. 2,203,213. Ernest F. Doom and William J. Priestley to Electro Metallurgical Co.

Process producing low-carbon alloy containing chromium metal and columbium-tantalum group metal. No. 2,203,214. Ernest F. Doom to Electro Metallurgical Co.

Method producing thin copper foil by electrodeposition on chromium surface and subsequent treatment. No. 2,203,253. Morris Brown to Western Electric Co., Inc.

Process separating ores. No. 2,203,601. Victor Rakowsky, Ray W. Arms, and Grover J. Holt to Minerals Benefication, Inc.

Method for producing steel. No. 2,203,778. Marvin W. Ditto to Emulsions Process Corp.

Method of sintering porous metal objects. No. 2,203,895. James H. Davis, Roland P. Koehring, and John T. Marvin, to General Motors Corp.

Process of hardening steel wires. No. 2,204,005. Robert Suchy to I. G. Farbenindustrie Aktiengesellschaft.

Apparatus for recovering precious metals. No. 2,204,018. Errol F. Kingsley.

Process treating steel with relatively high sulfur coal and making from the coal a producer gas having sulfur compounds therein. No. 2,204,-148. Joseph C. Nelms.

Method of heat treating steel and the metallurgical product produced thereby No. 2,204,209. Edmund S. Davenport and Edwin H. Engel to United States Steel Corp.

Process for producing beryllium. No. 2,204,221. Bengst Kjellgren and Charles Sawyer to Brush Beryllium Co.

Process for decomposing zirconium ore. No. 2,204,454. L. Teichmann and H. Martini to I. G. Farbenindustrie A. G.

Paper and Pulp

Process of concentrating and dialyzing waste pulp liquor and the product thereof. No. 2,201,812. Friedrich Konrad Daniel.

Method making paper from fibre-water mixture containing negatively charged colloids. No. 2,202,717. Donald K. Pattilloch to Pattiloch Processes, Inc.

Method of bleaching pulp. No. 2,203,205. Francis G. Rawling to West Virginia Pulp and Paper Co.

Method bleaching pulps to high brightness by use of free chlorine. No. 2,203,212. Ferri Casciani to Niagara Alkali Co.

Treatment of cellulosic materials such as paper and fabrics to make them resistant to water. No. 2,203,231. Thomas L. Osborne to Callender's Cable and Construction Company.

Petroleum

Process for the reforming and polymerization of hydrocarbons. No. 2,201,306. Philip Subkow to Union Oil Co. of Calif.

Motor fuel comprising hydrocarbons and normally tending to deteriorate containing a N-furfurylaminophenol in an amount sufficient to substantially inhibit the deterioration. No. 2,201,553. Frederic R. Bean to Eastman Kodak Co.

Process of separating hydrocarbon mixtures. Nos. 2,201,821-822. Chester C. Andrews and Merrell R. Fenske to Rohm and Haas Co.

Process sweetening mercaptan-containing petroleum distillates. No. 2,201,883. Robert E. Burk to The Standard Oil Co. of Ohio.

Process for converting liquid hydrocarbon into gaseous fuel. No. 2,201,965. John T. Cook, Earl Gray.

Reissue. Production aromatic hydrocarbons from aliphatic hydrocarbons of from 6-12 atoms. Nos. 21,464,-5,-6,-7. Jacque E. Morrell and Aristid V. Grosse to Universal Oil Products Company.

Process for the removal of mercaptans from hydrocarbon distillates. No. 2,202,039. David L. Yabroff and Ellis Rose White to Shell Development Co.

Process for pyrolytic conversion of hydrocarbon oils. No. 2,202,076. Charles H. Angell to Universal Oil Prods Co.

Production of octaines which comprisess subjecting butanes at temperatures —50° to +20° C. to treatment with butenes in presence of Hcl and Zn. No. 2,202,115. Jacque C. Morrell to Universal Oil Prods. Co.

Extraction of hydrocarbon material with light hydrocarbons. No. 2,202,389. Warren K. Lewis and James M. Whiteley to Standard Oil Development Co.

Method of improving knock rating of naphthas. No. 2,202,401. Raphael Rosen to Standard-I. G. Co.

Apparatus for cracking oil. No. 2,202,463. Alfred Oberle, Grace Oberle administratrix for deceased.

Continuous chilling process for dewaxing. No. 2,202,542. Vandeveer Voorhees to Standard Oil Co. of Indiana.

Antioxidant for cracked gasoline distillate. No. 2,202,876. Donald R. Stevens and William A. Gruse to Gulf Oil Corp.

Antioxidants and petroleum oils containing the same. No. 2,202,877. Donald R. Stevens, and William A. Gruse to Gulf Oil Corp.

Process for pyrolytic conversion of hydrocarbon oils. No. 2,203,025. Jacque C. Morrell to Universal Oil Prod. Co.

Process for recovering alkyl phenols from petroleum oils. No. 2,203,-217. Walter J. Hund and Samuel B. Thomas, and Daniel B. Luten, Jr., to Shell Development Co.

Process cracking hydrocarbon mixtures boiling above 250° C. which are substantially free from asphalts, sulfur and nitrogen compounds. No. 2,203,470. Mathias Pier and Friedrich Christmann to I. G. Farbenindustrie Aktiengesellschaft.

Process increasing anti-knock value of hydrocarbons boiling in gasoline range. No. 2,203,825. Vasili Komarewsky to Universal Oil Prods. Co.

Catalytic process for dehydrogenating aliphatic hydrocarbons. No. 2,203,826. Vasili Komarewsky to Universal Oil Products Co.

Conversion of hydrocarbons. No. 2,203,829. Friedrich W. Leffer to Universal Oil Products Company.

Improved method of heating in pyrolytic conversion of light hydrocarbon oils. No. 2,203,833. Lev. A. Mekler to Universal Oil Prods. Co.

Process increasing anti-knock value of gasoline fractions. No. 2,203,-836. Jacque C. Morrell to Universal Oil Prods. Company.

Method increasing knock value of Diesel fuel. No. 2,203,838. George B. Murphy and William H. Hubner to Universal Oil Prods. Co.

Production of low boiling motor fuels. No. 2,203,842. Mathias Pier to I. G. Farbenindustrie Aktiengesellschaft.

Hydrocarbon oil conversion process. No. 2,203,850. Hans Tropsch, deceased, by Carl W. von Helmolt to Universal Oil Products Company.

Process distilling petroleum oils. No. 2,203,930. Frank J. Smith to Standard Oil Co., Chicago.

Gasoline type motor fuel of normal vapor pressure. No. 2,204,215. Bernard S. Greensfelder and Russell N. Shiras to Shell Development Co.

Process cleaning oil wells from high melting organic deposits. No. 2,204,224. D. A. Limerick and H. C. Lawton to Shell Development Co.

Process sweetening and stabilizing petroleum oil of the type of naphthas, kerosenes and the like. No. 2,204,234. W. A. Schulze to Philips Petroleum Co.

Lubricating oil containing sulfurized esters. No. 2,204,538. B. H. Lincoln and W. L. Steiner to Continental Oil Co.

Pigments

Process improving stability of luminous pigments. Nos. 2,202,233-239. Konrad Schad to I. G. Farbenindustrie Aktiengesellschaft.

Method improving pigment titanium oxide for use in manufacture of artificial silk. No. 2,202,594. Harry D. Mudford to National Lead Co.

Method producing iron oxide pigment. No. 2,203,905. Joseph C. Heckman.

Resins, Plastics, etc.

Plastic-material cutting machine. No. 2,201,391. Charles Doering, Henry H. Doering, Eric W. Anderson and Bertil Skoglund. Anderson and Skoglund to Charles Doering and Henry H. Doering.

A natural petroleum plastic. No. 2,201,466. Alvin P. Anderson to Shell Development Co.

Method making composite article comprising fibrous sheets impregnated with resins. No. 2,201,568. Lloyd E. Wood to Western Electric Co.

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Apparatus for applying a plastic insulating composition. No. 2,201,736. Orville V. McGrew.

Modified resinous condensation products of methyl vinyl ketone and formaldehyde, and process of producing same. No. 2,201,750. Karl Vierling and Heinrich Hopff to I. G. Farbenindustrie Aktiengesellschaft.

Process of producing molding composition from lignin and formaldehyde. No. 2,201,797. Clarence W. Scott.

Homogeneous plastic composition comprising in combination one part by weight of a condensation product of olefine dihalide with an aromatic hydrocarbon. No. 2,201,871. Raphael Rosen to Standard Oil Development Co.

Reinforced plastic and material therefor. No. 2,202,013. Victor Lougheed.

Plastic composition for use as interlayer sheets in laminated glass. No. 2,202,160. Barnard M. Marks to E. I. du Pont de Nemours & Co.

Recovery of plastic materials. No. 2,202,481. Henry L. Cox and Jacob D. Matlack to Carbide and Carbon Chemicals Corp.

Thermoplastic composition provided by reaction of ethyl sulfate upon sulfuric casein in presence of ethyl alcohol and a relatively weak alkali salt. No. 2,202,623. Jean Delorme to George Morrell Corp.

Method of and apparatus for curing and molding synthetic or natural resins. No. 2,202,797. John Hoge and Leonard D. Soubier to Owens-Illinois Glass Co.

Resin from cashew nutshell oil and another phenol. No. 2,203,206. Alvin F. Shepard, Joseph F. Beiney and Lothar Sontag to General Plastics, Inc.

Method forming containers from plastic materials. No. 2,203,421. Earl P. Stevenson and Ben. B. Fogler to Arthur D. Little, Inc.

Apparatus for heating moldable thermoplastic materials. No. 2,203,620. Graydon Smith, to Reed Prentice Corp.

Thermo-setting molding composition comprising formaldehyde-urea reaction product and latent accelerator selected from group consisting of delta glucono lactone and gamma galactono lactone. No. 2,203,772. David E. Cordier to Plaskon Company, Inc.

Formaldehyde-urea molding composition containing dibenzhydroxamic acid as latent accelerator. No. 2,203,794. Leonard S. Meyer to Plaskon Company, Inc.

Formaldehyde-urea molding composition containing ethylene thiocyanates as latent accelerator. No. 2,203,800. John K. Simons to Plaskon Company, Inc.

Rubber

Process dispersing pigment in rubber in presence of minor proportion of heat liquefied oxygenated rubber. No. 2,201,273. Frank K. Schoenfeld to The B. F. Goodrich Co.

Plasticized synthetic rubber compositions. No. 2,202,363. Peter J. Wiezevich—judicial change to Peter J. Gaylor, to Standard Oil Development Co.

Production of aliphatic ketone-diarylamine antioxidants. No. 2,202,934. William F. Tuley, Charles S. Dewey and Roy S. Hanslick to United States Rubber Co.

Production vulcanized rubber products comprises vulcanizing in presence of pyrimidine-4-sulfide as accelerator. No. 2,203,090. Louis H. Howland to United States Rubber Co.

Method raising surface tension of uncompounded rubber latex. No. 2,203,866. Willis A. Gibbons and John McGavack to United States Rubber Company.

Method retarding deterioration of rubber comprises treating with a 1,2-dihydroquinoline. No. 2,203,899. Raymond F. Dunbrook and Bingham J. Humphrey to The Firestone Tire & Rubber Co.

Textiles

Reissues. Spinning solutions for manufacturing artificial products comprising protein selected from group consisting of silk fibroin, wool, gelatin, alginic acid and casein finely dispersed respectively in quaternary benzyl substituted ammonium base, quaternary phenol substituted ammonium base and quaternary tolyl substituted ammonium base. Nos. 21-454-5-6. Rudolph S. Bley to North American Rayon Corp.

Process treating cotton materials comprises subjecting to copper sulfate, ammonia, and caustic soda solution. No. 2,201,262. William H. Furness to American Rayon Company, Inc.

A coated and impregnated fabric. No. 2,201,891. Donald E. Edgar and Paul Robinson to E. I. du Pont de Nemours & Co.

Tire cords of improved strength comprising cellulose yarns having .5-5% tricresyl phosphate incorporated therein. No. 2,201,992. Camille Dreyfus and George Schneider to Celanese Corp. of America.

Process for obtaining crepe effects on fabrics. No. 2,202,041. Hans Altwegg and Armin Eichler to E. I. du Pont de Nemours & Co.

Process of producing pattern effects on textile fabrics. No. 2,202,200. Robert Haller and Gustav Widmer to Ciba Products Corp.

Method decorating textile fabric comprises printing with emulsion the inner phase of which is a water solution of a dyestuff and outer phase a water immiscible film forming liquid. No. 2,202,283. Norman S. Cassell to Interchemical Corp.

Textile bleaching methods. Nos. 2,202,331-2-3-4-5. Ernest Butterworth to Imperial Chemical Industries, Ltd.

Process for bleaching cotton. No. 2,202,478. Thomas E. Bell to E. I. du Pont de Nemours & Co.

Coloration of textile and other materials. No. 2,202,902. George Holland Ellis and Henry C. Olpin to Celanese Corp. of America.

Process dyeing mixed fabrics consisting of cellulose or regenerated cellulose and cellulose-esters or ethers with so-called diazo colors. No. 2,203,305. Paul Rabe and Hans Roos to General Aniline and Film Corp.

Process finishing fabric containing vegetable fiber to obtain good mercerization sheen and improved stability against shrinkage. No. 2,203,375. Ernst Weiss to Heberlein Patent Corp.

Process and apparatus for sulfur bleaching animal textile fiber. No. 2,204,044. Lindsey H. Mason.

Method producing fire retardant and water resistant fibers. No. 2,204,336. E. O. Whittier and S. P. Gould to free use of people of U. S.

Process for protecting fibrous materials of keratin composition. No. 2,204,360. H. Humfeld, J. H. Kettering and R. E. Elmquist to free use of people of U. S.

Fiber comprising casein, sulfonated casein, salts of sulfonated casein and of casein as its essential components; and fat acids. No. 2,204,535. S. P. Gould and E. O. Whittier to free use of people of U. S.

WHATEVER HAPPENS

The next twelve months appear to be the most opportune time to keep in the closest touch with business and commercial phases of the chemical and allied industries.

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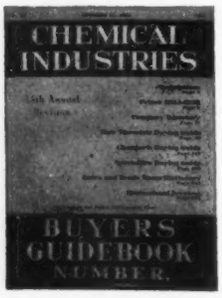

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Foreign Chemical Patents
Belgian, Canadian and English—p. 23

Abstracts of Foreign Patents

By E. L. Luaces, Chemical Consultant

To assist those making use of this summary, it might be well to comment briefly on the system used by each of these countries in reporting patents.

Canada grants the patent on the date of publication. It does not print the patents, but supplies typewritten certified copies at a cost averaging about five dollars each.

English "patents" here reported are known as *Complete Specifications Accepted* and are open to opposition by interested parties for a period of two months from date of publication. Printed copies may be obtained at ls. ld. each.

French patents are granted several months before publication, and the printed report issued several days or even weeks after its date. Printed copies may be obtained at 10 francs each.

Belgian patents, like French, are granted long before publication. The report comes out 12 times each year, and photostatic copies can be obtained at from 3.50 to 4.50 francs per page.

In this digest the latest available data will be published, but it will be understood that some delay will occur as a result of present conditions in Europe. The German patents will be reported just as soon as we are sure of uninterrupted service.

We shall be glad to receive comments or criticisms.

BELGIAN PATENTS

Granted September 30, 1939; Published April 11, 1940.

Process and apparatus for the treatment of casein mixtures. No. 435,016. M. Schenker.

Impregnation of fibrous matter with substances capable of dissociating rubber, such as resorcin, phenylhydrazine and hydroquinone. No. 435,273. Gummiwerke Fulda A. G.

Improvement in vulcanization of rubber using as activator the non-hygroscopic product of the addition of an acid salt of zinc and a diarlyguanidine. No. 435,807. American Cyanamid Company.

Production of pure phenol from raw phenol by treatment with a non-volatile mineral acid and an aqueous solution of caustic soda, followed by separation by distillation. No. 435,808. I. G. Farbenindustrie A. G.

Method of preparing substances with capillary action. No. 435,881. I. G. Farbenindustrie A. G.

Process for aromatizing and dehydrogenating hydrocarbons. No. 435,906. Ruhrchemie Aktiengesellschaft.

Method of preparing resinous compositions. No. 435,917. S. E. M. Société d'Electricité et de mecaniques, procedes Thomson-Houston, Van Den Kerchove & Carels.

Process for the preparation of alkylated aromatic sulfonic acids. No. 435,952. I. G. Farbenindustrie A. G.

Process for the manufacture of paints and coatings. No. 435,958. Dr. Alexander Wacker Ges. fur Elektrochemische Industrie G. m. b. H.

Resinous condensation products produced from bicyanated diamides. No. 435,973. American Cyanamid Company.

Polyazo dyes containing 8-oxyquinolein as characteristic group. No. 435,980. Société pour l'Industrie Chimique a Bale.

Process for the preparation of derivatives of phosphoric acid containing sulfur and having bactericidal properties. No. 435,994. Produits Roche S. A.

Decalcification of cobalt solutions. No. 435,999. Ruhrchemie A. G.

Process for the removal of sulfur anhydride from gases. No. 436,031. I. G. Farbenindustrie A. G.

Process for the manufacture of pyrazolone derivatives of N-(1)-alkylsulfonic acids. No. 436,038. I. G. Farbenindustrie A. G.

Preparation of synthetic resins by reacting a derivative of ethylene oxide with the anhydride of an organic di- or polybasic acid. No. 436,046. De Trey Freres S. A.

Process for the manufacture of mixtures of hydrogen and carbon monoxide suitable for the production of gasoline by the Fischer-Tropsch process. No. 436,077. Ges. fur Linde's Eismaschinen A. G.

Process for the preparation of alkinols. No. 436,090. I. G. Farbenindustrie A. G.

New combination of pyrimidines. No. 436,147. I. G. Farbenindustrie A. G.

Process for the preparation of gaseous mixtures rich in hydrogen by combustion of methane with oxygen. No. 436,152. Ges. fur Linde's Eismaschinen A. G.

Process and apparatus for the continuous treatment of cellulose solutions in string mineral acids. No. 436,169. I. G. Farbenindustrie A. G.

Process and installation for the manufacture of ammonium nitrate. No. 436,193. S. A. d'Explosifs et de Produits Chimiques.

Process for the manufacture of aliphatic diamines. No. 436,222. E. I. du Pont de Nemours & Co., Inc.

Process for the manufacture of zinc white from metallic raw materials. No. 436,223. C. T. Lobbecke & Co.

CANADIAN PATENTS

Granted and Published May 21, 1940.

Reduction of zinc, cadmium and mercury bearing ores in admixture with a solid reducing agent and a solid basic material by high frequency induction at the temperature of vaporization of the metal. No. 388,744. Harold A. Blackwell and William L. Turner.

Apparatus for the trapping of fly ash and soot in gases. No. 388,775. Walter H. Rectanus.

Oil-soluble resin containing in combination a phenol, a terpene material, an aldehyde, and the positive radical of an inorganic chloride liquid at room temperature. No. 388,778. Israel Rosenblum.

Alloy of copper, cobalt and zinc having improved hardness and strength. No. 388,789. The American Brass Company. (Cyril S. Smith.)

Solid, non-porous, anhydrous, monocalcium phosphate crystals small enough to pass a 100 mesh screen and having a concentration of alkali metal impurities at their surface, and process for making. No. 388,809. Victor Chemical Works. (William H. Knox, Jr.)

Finely divided anhydrous monocalcium phosphate having a thin, autogenous, glassy, substantially complete, relatively insoluble coating and being substantially free from pyrophosphate. No. 388,810. Victor Chemical Works. (Julian R. Schlaeger.)

Moisture-proof, water-insensitive wrapping tissue comprising a base of low substituted cellulose ether having a coating thereon selected from wax-cellulose derivative coating composition, wax-rubber coating composition and wax-synthetic resin coating composition. No. 388,820. E. I. du Pont de Nemours & Co., Inc. (Deane C. Ellsworth.)

Separation of particles which differ in their ability to receive electrical charges by passing them through an electrostatic separator in an atmosphere the humidity of which is controlled by removal therefrom of part of the normal content. No. 388,827. International Titanium Limited. (Frank A. Fahrenwald, Norman F. Parkingson and George H. Barnes.)

Fibrous glass composition comprising silica, boric oxide, monobasic and dibasic oxides, said boric oxide being at least 5% by wt. and said monobasic oxide less than about 12% by wt. No. 388,836. Fiberglas Canada Limited. (Urban E. Bowes.)

Continuous regenerative process of extracting mercaptans from sour hydrocarbon oils by washing with aqueous hydroxide to form soluble mercaptides, electrically oxidizing them to insoluble disulfides, separating the disulfides, and returning electrolyzed solution to cycle. No. 388,852. Shell Development Company. (David L. Yabroff and John W. Givens.)

Emulsified hydrocarbon spray oil composition comprising normally liquid plant spray mineral oil, and an emulsifying amount of a high-acid fish oil obtained from the acid sludge from sulfuric acid refining of fish oil by neutralizing the sludge with an alkali to separate said high-acid fish oil from the sludge. No. 388,854. Shell Development Company. (Arthur E. Allum, Jr.)

Composition board comprising special pulp obtained by pulping a mixture of waste papers, the long and short fibres of which act as binder and filler, said pulp being washed, sized, colored and subjected to super-atmospheric pressure and heat to form a stiff board. No. 388,868. Waste Paper Products Limited. (Maurice Prouxl.)

Easily machineable and stain-resisting alloy casting characterized by its structure of fine polyhedral crystals and by capability of successive heat treatments for annealing and hardening. No. 388,875. William P. Digby and Everard T. Digby.

Separation of ores by flotation. No. 388,884. Minerals Beneficiation Incorporated. (Victor Rakowsky and Ray W. Arms.)

Granted and Published May 28, 1940.

An oxide-coated aluminum article having a relatively low adherence to ice formed in contact with its surface comprising an adherent oxide coating impregnated with a sulfuric reaction product. No. 388,925. (see also No. 388,926). Aluminum Company of America, (Charles J. Slunder.)

Recovery of phenol from aqueous liquor by extraction with a tar acid of higher boiling point than phenol, separating the tar, and distilling the phenol from it. No. 388,933. Bakelite Corporation. (Vittorio Molinari.)

Preparing pentaglycol by reacting a mixture of isobutylaldehyde and formaldehyde with an alkali selected from alkali metal hydroxides and alkaline earth metal hydroxides in a reaction medium containing approximately 20-60% water by wt. No. 388,944. Canadian Industries Limited. (Joseph F. Walker and Morris Turnbull.)

Manufacture of pentadecyl sulfates. No. 388,945. Canadian Industries Limited. (James H. Werntz.)

Preparation of glycolic acid by reacting formaldehyde, water and CO catalyzed by an inorganic acidic catalyst while dissolved in at least ½ mol. of an organic acid per mol. of formaldehyde. No. 388,946. Canadian Industries Limited. (Alfred T. Larson.)

Vat dye color preparation comprising intimate admixture of a vat dye and formamidine-sulfonic acid. No. 388,948. Canadian Industries Limited. (Herbert A. Lubus.)

Process comprising heating together stearamide, formaldehyde, phthalic anhydride and pyridine in an inert organic diluent at temperature be-

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tween 70 and 85° C. until a water-soluble, foaming reaction product has been obtained. No. 388,948. Canadian Industries Limited. (Joseph H. Shipp.)

Water-insoluble reduction derivatives of the alkyl ethers of Bz-2,-Bz-2'-dihydroxydibenzanthrone. No. 388,949. Canadian Industries Limited. (Otto Stallmann and William M. Wentz.)

Dyestuff paste comprising stable leuco derivative of an alkyl ether of Bz-2,Bz-2'-dihydroxydibenzanthrone. No. 388,950. Canadian Industries Limited. (John E. Cole.)

Photographic element comprising a light-transmitting support having an antihalation layer of polyvinyl phthalate and a dye. No. 388,957. Canadian Kodak Company, Ltd. (Gale F. Nadeau and Clemens B. Starch.)

Manufacture of aryl substituted mono-olefine derivatives by catalysis. No. 388,972. The Distillers Company Limited. (Herbert M. Stanley and John B. Dymock.)

Purification of beta-phenylethyl alcohol. No. 388,978. The Dow Chemical Company. (Joseph W. Britton.)

Producing the dimer of an aliphatic polyhydric alcohol by heating the alcohol to temperature of condensation and subsequently treating the reaction mixture under reduced pressure with steam. No. 388,979. E. I. du Pont de Nemours & Co., Inc. (George W. Batchelder.)

Producing glycolic acid by introducing into a reaction vessel and subjecting to liquid phase reaction, CO, formaldehyde, and water. No. 388,980. E. I. du Pont de Nemours & Co., Inc. (Donald J. Loder.)

Naphthenyl esters of phosphorus acid obtained by reacting an esterifying derivative of a phosphorous acid with 3 mols. of a mixture of naphthenyl alcohols. No. 388,981. E. I. du Pont de Nemours & Co., Inc. (Paul L. Salzberg.)

Stabilizing agent comprising trichlorethylene and stabilizing amounts of a substituted phenol and p-tert-amyl phenol. No. 388,982. E. I. du Pont de Nemours & Co., Inc. (Arthur A. Levine and Oliver W. Cass.)

Trichlorethylene stabilized by addition of triphenyl guanidine. No. 388,983. E. I. du Pont de Nemours & Co., Inc. (Arthur A. Levine and Oliver W. Case.)

Milk soluble alginate compound obtained by mixing alginic acid and a neutralizing agent until the mass is converted into a paste; then adding sodium salts of an acid whose calcium salt is insoluble in water, agitating the mixture until it has reacted, drying it, and comminuting the dried material. No. 389,000. Kelco Company. (Howard J. Lucas.)

Vulcanizing rubber by heating with sulfur in presence of compound of the formula R-S-NH-R', wherein R represents an arylene thiazyl group and R' a hydrocarbon radical from the group consisting of cyclohexyl, benzyl and hexahydrobenzyl radicals. No. 389,010. Monsanto Chemical Company. (Marion W. Harmon.)

Production of chemical product of the formula R-S-NH-R' wherein R is an arylene thiazyl group and R' is a hydrocarbon radical, by condensing a mercapto aryl thiazole and a primary amine selected from a group consisting of cyclohexyl benzyl and hexahydrobenzyl amines in presence of an oxidizing agent. No. 389,011. Monsanto Chemical Company. (Marion W. Harman.)

Method for the production of beryllium oxide with cyclic recovery of the reagents employed. No. 389,023. Seri Holding S. A. (Carlo Adamoli.)

Emulsified oil suitable as insecticide in admixture with water, comprising a petroleum sulfonate bleachable cottonseed oil and a plant spray mineral oil. No. 389,024. Shell Development Company. (Paul R. Jones.)

Process for dephosphorizing and desulfurizing steel in liquid state with a basic compound of an alkali-metal and a substance forming with said basic compound a definite compound stable at high temperature, such as alumina or tatanic acid. No. 389,026. Société d'Electrométallurgie et des Acieries Electriques d'Ugine. (Robert P. Lemoine.)

Granted and Published June 4, 1940.

Kindling product composed of shavings and sawdust 22 parts, paraffine wax 8 parts, tallow 2 parts, resin 6 parts, and a quantity of oaker sufficient to impart coloring effect. No. 389,076. Hugh Dickie.

Heat treatment of aluminum base alloys. No. 389,109. Aluminum Company of America. (Kenneth B. Baker.)

Quenching heat-treated aluminum articles at substantially the solution heat-treating temperature to an atmosphere charge with fine particles of liquid quenching medium, and thereby removing heat to the desired level so rapidly that the article is resistant to intergranular corrosion. No. 389,110. Aluminum Company of America. (Howard P. Bonebrake.)

Improving properties of synthetic liner polyamides in form of filaments, fibres, bristles, films, fabrics, etc., by treating with a setting agent in presence of a water-soluble sulfite. No. 389,127. Canadian Industries Limited. (Winfield W. Heckert.)

Producing a mercapto-aryl-thiazole compound by reacting metallic salt of trithio-carbonic acid with a thiophenol having an amino group ortho to a mercapto sulfur atom. No. 389,138. Dominion Rubber Company, Limited. (William E. Messer.)

Process comprising reacting fluorene with solution of the sodium addition compound of a polycyclic aromatic hydrocarbon, said compound being dissolved in an activating solvent for the reaction. No. 389,140. E. I. du Pont de Nemours & Co., Inc. (Norman D. Scott, Virgil L. Hansley and Joseph F. Walker.)

Addition of an alkali metal to a polycyclic aromatic hydrocarbon which will form addition compounds therewith by reaction of the alkali metal and the hydrocarbon in a reaction medium comprising a polyether derived from an aliphatic polyhydric alcohol having all the hydroxyl hydrogen atoms replaced by alkyl groups, of which at least one contains more than one carbon atom which ether is substantially inert to both reagents and the products under the conditions of the reaction and its present in sufficient amounts to promote the reaction. No. 389,141. E. I. du Pont de Nemours & Co., Inc. (Norman D. Scott.)

Composition of matter comprising a solution of acetylene in a solvent comprising tetrtamethyl urea. No. 389,142. E. I. du Pont de Nemours & Co., Inc. (Norman D. Scott and Charles R. Harris.)

Process for making polyamides by heating at approximately 100-300° C. ingredients consisting substantially solely of polyamide-forming reactants. No. 389,143. E. I. du Pont de Nemours & Co., Inc., (Wallace H. Carothers.)

Improving the crimp retentivity of fibres comprising a synthetic linear polyamide by treating the crimped fibres with steam. No. 389,149. E. I. du Pont de Nemours & Co., Inc. (John B. Miles, Jr.)

Impregnating a porous material such as wood by immersing it in a liquid, non-aqueous mentruum carrying an impregnating agent and having a boiling point not substantially higher than about 1° C., such as methyl chloride. Nos. 389,147 and 389,148. E. I. du Pont de Nemours & Co., Inc. (Ernest R. Boller.)

Treatment of wood to prevent grain-raising. No. 389,162. I. F. Laucks, Inc. (Hugh F. Rippey and Theodore W. Dike.)

Forming ether derivatives of polyhydric alcohols by boiling a mixture containing an ester consisting of a polyhydric alcohol partially esterified with a carboxylic acid, a water carrier having a lower boiling point than said mixture and soluble in water, and an esterifying catalyst, and distilling of the water formed by the reaction. No. 389,172. The Procter & Gamble Company of Canada, Limited. (Eddy W. Eckey.)

Continuous niitration of saturated hydrocarbons having in excess of two carbon atoms by passing a mixture of substantially pure nitrogen dioxide and a saturated hydrocarbon through a reaction vessel maintained at a temperature between 300 and 600° C. and regulating the space velocity of the reactants so that the characteristic brown color of nitrogen dioxide is practically invisible in the gaseous reaction products. No. 389,173. Purdue Research Foundation. (Henry B. Hass and Edward B. Hodge.)

Alkylated aromatic ether polysulfates. No. 389,181. Rohm & Haas Company. (Herman A. Bruson.)

Refining neat's foot oil to produce low cold test oil by diluting with ¼ to 4 volume of a mixture one part benzol to four part acetone by volume, lowering the temperature to at least about —10° C. and separating the material solidified thereby No. 389,186. Shell Development Company. (George Voogst and Hans Seeles.)

Manufacture of pigment by uniting a coloring matter with a condensation product of an aminotriazine and an aldehyde. No. 389,188. Society of Chemical Industry in Basle. (Gustav Widmer.)

Manufacture of melamine from dicyandiamide and liquid ammonia at a temperature up to 100° C., the proportion of ammonia used being less than that necessary to dissolve completely the dicyandiamide at room temperature. No. 389,189. Society of Chemical Industry in Basle. (Gustav Widmer.)

Separation and purification of homologous saturated and unsaturated carbonyl compounds. No. 389,190. Society of Chemical Industry in Basle. (Karl Miescher and Werner Fischer.)

Manufacture of derivatives of the saturated and unsaturated cyclopentanopolyhydrophenanthrene series by treating compounds of this series containing in the side chain an ethylene oxide ring with agents capable of splitting the oxide ring by reduction. No. 389,191. Society of Chemical Industry in Basle. (Karl Miescher and Albert Wettstein.)

Preparation of low substituted methyl cellulose soluble in 6% NaOH at about freezing point thereof but not practically soluble therein at ordinary temperatures. No. 389,212. Canadian Industries Limited. (Deane C. Ellsworth and Frederick C. Hahn.)

Preparation of low substituted cellulose glycollic acid substantially insoluble in dilute caustic alkali solution at ordinary temperatures by soluble therein near freezing point thereof. No. 389,213. Canadian Industries Limited. (Deane C. Ellsworth.)

Compound of the anthraquinone series having at least one group $-NH-C_2H_4-CO$-alkyl. No. 389,222. Heinrich Hopff, Helmut Eichel and Adolf Diebold.

Granted and Published June 11, 1940.

Coating of Mg and Mg alloys by passing electric current therethrough while functioning as an electrode in a bath containing the phosphate and chromate radicals, the pH being on the acid side and the current density from 2-100 amperes per sq. ft. No. 389,232. Robert W. Buzzard.

Anodic coating of Mg to its alloys by electrolytically subjecting the article to reaction with sulfate ions in presence of chromate ions at current density from 1-100 amperes per sq. ft., pH range 2-5 and temperature 20-80° C. No. 389,233. Robert W. Buzzard.

Fluorescent material for electric discharge lamps comprising calcium oxide and tungstic oxide, the CaO being in excess of requirement by the formula $CaWO_4$. No. 389,271. Canadian General Electric Company, limited. (Willard A. Roberts.)

Coating for ferrous alloys comprising from 1-100 parts by wt. of colloidal aluminum silicate (bentonite, kaolin) in solution comprising about 100 parts water, 1-10 parts boric acid and magnesium oxide in quantity from 1-100% of wt. of boric acid. No. 389,277. Canadian General Electric Company, Limited. (Leon McCulloch.)

Producing active carbon from sub-bituminous coal by charring and then activating at 500-1100° F. in presence of substantial proportions of CO. No. 389,298. The Colorado Fuel and Iron Company. (Kenneth B. Stuart.)

Production of CCl_4 by reacting CS_2 with SCl_2 under at least 1½ atmospheres pressure. No. 389,307. The Dow Chemical Company. (John H. Reilly.)

Continuous production of ethylene bromide by reacting liquid bromine with an ethylene-containing gas free from other reactive components, the bromine being in excess of stoichiometrical proportion to the ethylene in the gas. No. 389,308. The Dow Chemical Company. (Grayton F. Dressel and Charles E. Short.)

Purifying naphthenic acids by adding to a slightly alkaline reacting aqueous solution of an alkali metal salt of said acids 10-100 volume % of sea water to precipitate impurities, and separating the precipitate. No. 389,343. Shell Development Company. (Hendrick J. Donker.)

Oil cracking catalyst comprising product formed by first treating a base exchange zeolite compound with ammonium molybdate and thereafter heating to liberate ammonia and hydrogen. No. 389,346. Standard Oil Development Company. (Stewart C. Fulton and Boris W. Malisher.)

Hydrocarbon catalyst prepared by mixing catalytic material with normally solid hydrocarbon, molding, and heating to boil off the hydrocarbon without decomposition. No. 389,347. Standard Oil Development Company. (George L. Matheson.)

Desulfurizing gases prior to catalytic polymerization to form good antiknock liquid fuels. No. 389,358. Universal Oil Products Company. (Robert Pyzel and Elmer R. Kanahofer.)

Forming improved rubber hydrochloride films by homogenizing the cement at about 55° C. prior to casting the film. No. 389,361. Wingfoot Corporation. (George R. Lyon.)

Manufacture of halogenated alkyl phosphates by reacting phosphorous oxyhalide with an olefine oxide in presence of aluminum chloride as catalyst. No. 389,370. Henry Dreyfus. (Arthur J. Daly and William G. Lowe.)

ENGLISH COMPLETE SPECIFICATIONS

Accepted and Published May 8, 1940.

Process for improving tars or asphalts. No. 520,525. R. Lichtenstern.

Manufacture of double-base propellent powders. No. 520,577. Imperial Chemical Industries.

Production of fireproof rubber. No. 520,428. Dunlop Rubber Co., Ltd.

Foreign Chemical Patents
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Treatment of textile fabrics with synthetic resins. No. 520,579. Imperial Chemical Industries.

Method for partially oxidizing gaseous and vaporous hydrocarbons. No. 520,480. Gutehoffnungshutte Oberhausen A. G.

Coating of metals with lead. No. 520,581. A Robinson.

Apparatus for separating suspended matter from liquids by means of electrostatic precipitation. No. 520,481. J. Bibby & Sons, Ltd. *and* Sturtevant Engineering Co., Ltd.

Method and apparatus for sublimating materials at a low pressure. No. 520,434. N. V. Philips' Gloeilampenfabrieken.

Manufacture of indigoid vat dyestuffs. No. 520,391. Society of Chemical Industry in Basle.

Manufacture of substances which affect the blood pressure from urine. No. 520,392. Society of Chemical Industry in Basle.

Manufacture of carbonyl compounds of the cyclopentanopolyhydrophenanthrene series. No. 520,393. Society of Chemical Industry in Basle.

Manufacture of nitrogenous condensation products and a process of improving textiles. No. 520,394. I. G. Farbenindustrie A. G.

Preparation of pyridinium compounds. No. 520,396. Chemical Works formerly Sandoz.

Composition for treating soil. No. 520,402. Imperial Chemical Industries Ltd.

Process and apparatus for cleaning containers with alkaline cleansing agents. No. 520,413. Henkel & Cie. Ges.

Apparatus for controlling the production of inert atmospheres. No. 520,450. British Insulated Cables, Ltd.

Manufacture of artificial filaments, yarns, foils, and similar materials made of cellulose or its derivatives. No. 520,493. Henry Dreyfus.

Decolorizing of clays. No. 520,498. English Clays, Lovering, Pochin, & Co., Ltd.

Melting down and remelting old aluminum, aluminum scrap, residues, dross, and ashes. No. 520,533. K. Schmidt.

Plasticizing of polymeric organic sulfides. No. 520,505. Imperial Chemical Industries Limited.

Apparatus for metallizing by cathode disintegration. Nos. 520,591 and 520,592. B. Berghaus.

Treatment of castor oil to obtain product having the drying properties and resistance to water and carbonates of tung oil. No. 520,508. P. Rizzi.

Production of styrene. No. 520,602. H. Frisch.

Regeneration of paper pulp. No. 520,562. M. F. Bertrand.

Manufacture of motor fuel. No. 520,564. Standard Oil Development Company.

Manufacture of Diesel fuels. No. 520,568. Standard Oil Development Company.

Manufacture of basic condensation products. No. 520,573. B. Gaspar.

Accepted and Published May 15, 1940.

Distillation of coal and other solid carbonaceous substances. No. 520,676. F. W. Salisbury-Jones and R. Nisbet.

Manufacture of starch derivatives yielding solutions of high viscosity. No. 520,625. E. I. du Pont de Nemours & Co., Inc.

Production of aqueous compositions comprising thermo-setting resins. No. 520,828. J. V. Nevin.

Method and apparatus for the electromagnetic separation of materials. No. 520,626. U. S. Steel Corporation.

Manufacture of sintered calcium oxide. No. 520,829. A. G. fur Stickstoffdunger.

Process for the manufacture of iron oxide. No. 520,690. Priestman Collieries.

Process and apparatus for the manufacture of fuel briquettes. No. 520,728. K. Repetzki.

Production of alloys. No. 520,643. H. A. Richardson.

Plasticizing rubber. No. 520,653. Imperial Chemical Industries Limited.

Preparation of derivatives of p-aminobenzenesulfonamide. No. 520,707. Naamlooze Vennootschap Orgachemia.

Treatment of zirconium ores. No. 520,740. I. G. Farbenindustrie A. G.

Treatment of polymerized chloroprene. No. 520,745. B. B. Chemical Co., Ltd.

Photographic developers. No. 520,753. I. G. Farbenindustrie A. G.

Manufacture and applications of sulfurized hydrocarbon products. No. 520,761. E. I. du Pont de Nemours & Co., Inc.

Method of stabilizing and purifying lubricants. No. 520,792. Standard Oil Development Company.

Recovery of plastic materials. No. 520,870. Carbide and Carbon Chemicals Corp.

Method of converting liquid hydrocarbons into highly compressible dry gas. No. 520,660. R. Arnold.

Manufacture of aliphatic ketone-diarylamine anti-oxidants. No. 520,717. U. S. Rubber Products, Inc.

Accepted and Published May 22, 1940.

Sendimentation apparatus. No. 520,935. Dorr-Oliver Co., Ltd.

Process and apparatus for elimination of colloidal impurities from sweet juices and residual waters. No. 520,883. E. J. Hugel.

Process and device for producing artificial fogs. No. 520,888. B. Zabban.

Manufacture of synthetic mineral products. No. 520,889. W. Diterichs.

Manufacture of cyclopentanopolyhydrophenanthrene derivatives. No. 520,898. Society of Chemical Industry in Basle.

Process for the manufacture of acid violet triarylmethane dyestuffs. No. 520,968. I. G. Farbenindustrie A. G.

Luminescent powders and methods of manufacture. No. 521,099. British Thomson-Houston Co., Ltd.

Manufacture of carbonyl compounds of steroids. No. 521,109. Society of Chemical Industry in Basle.

Production of resinous rubber transformation products. No. 521,007. Albert Products, Ltd.

Treatment of textiles for water-repellency. No. 521,116. Deutsche Hydrierwerke A. G.

Production of valuable derivatives from iso-olefines. No. 520,023. Standard Oil Development Company.

Production of metallic molding powders. No. 521,051. Johnson Bronze Company.

Apparatus for removing dust and other impurities from air and other gases. No. 521,061. Yuille (Metal Wools), Ltd.

Production of mono-alkylol ketones. No. 521,068. N. V. de Bataafsche Petroleum Mij.

Digestion of sewage sludge. No. 521,036. J. D. Griffin.

Aluminum alloy. No. 521,089. Birmingham Aluminium Casting (1903) Co., Ltd.

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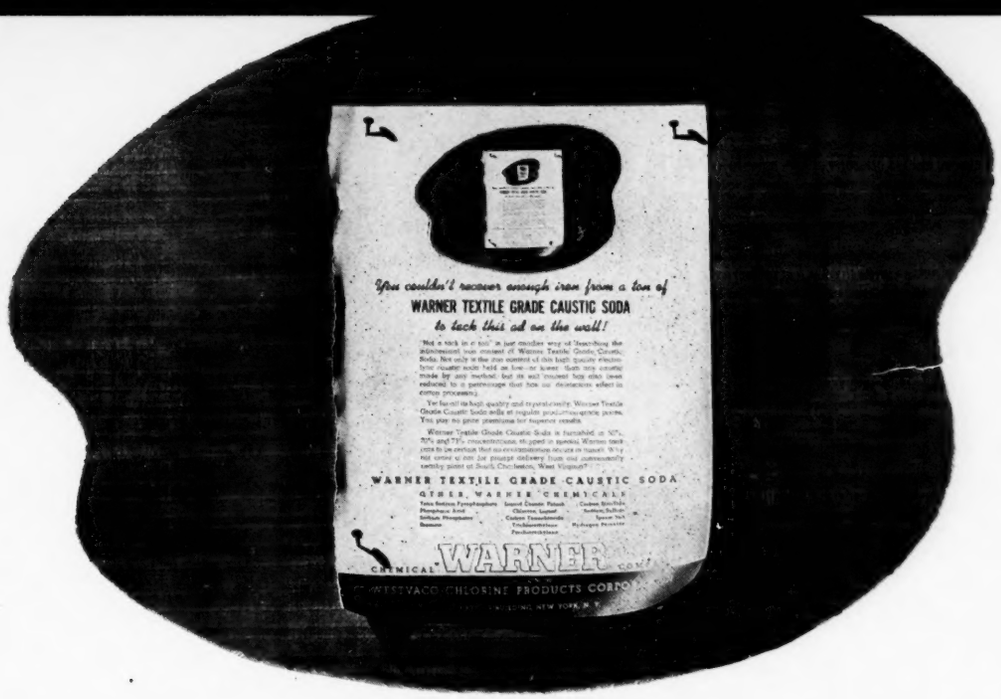
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